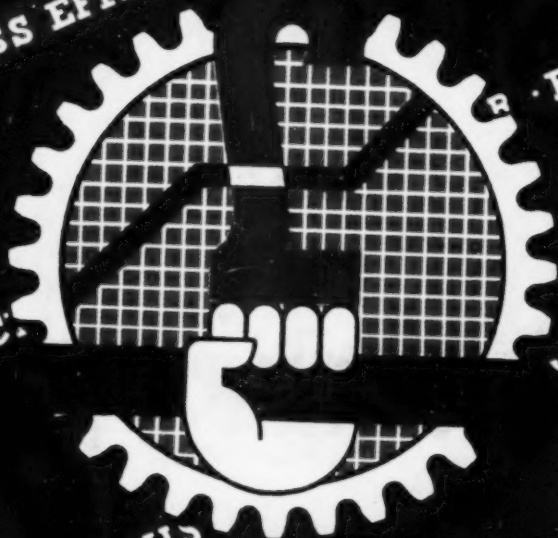
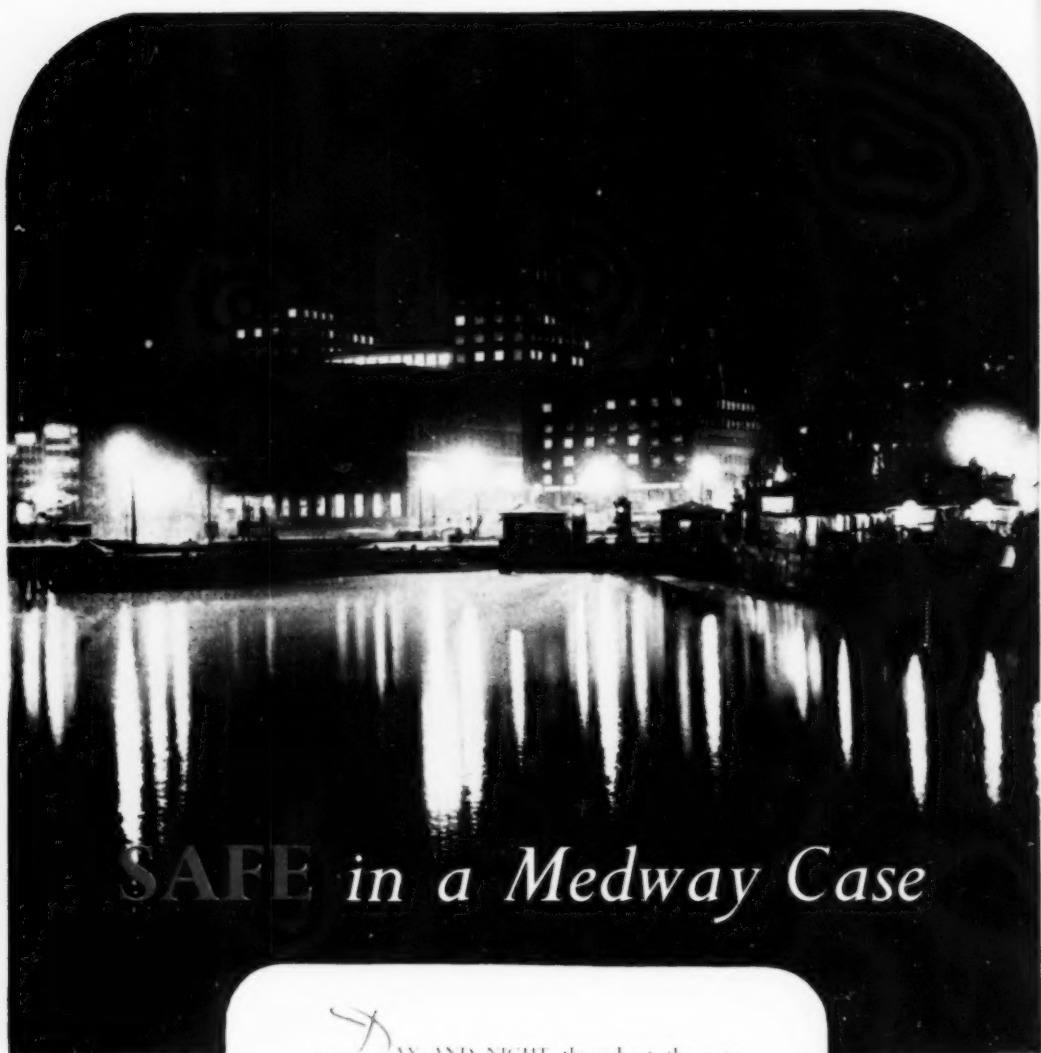


FEBRUARY 1952 2/6

BUSINESS

The Journal of Management in Industry





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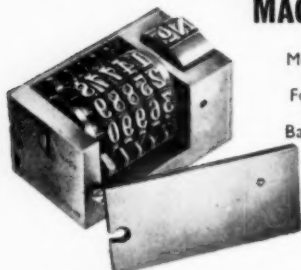
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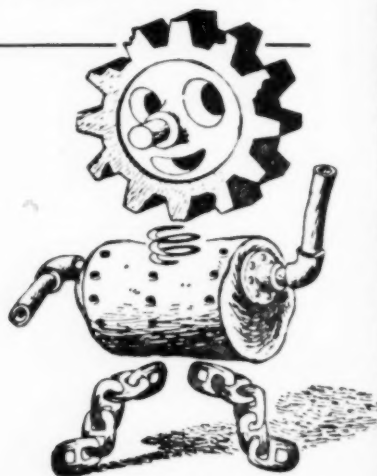
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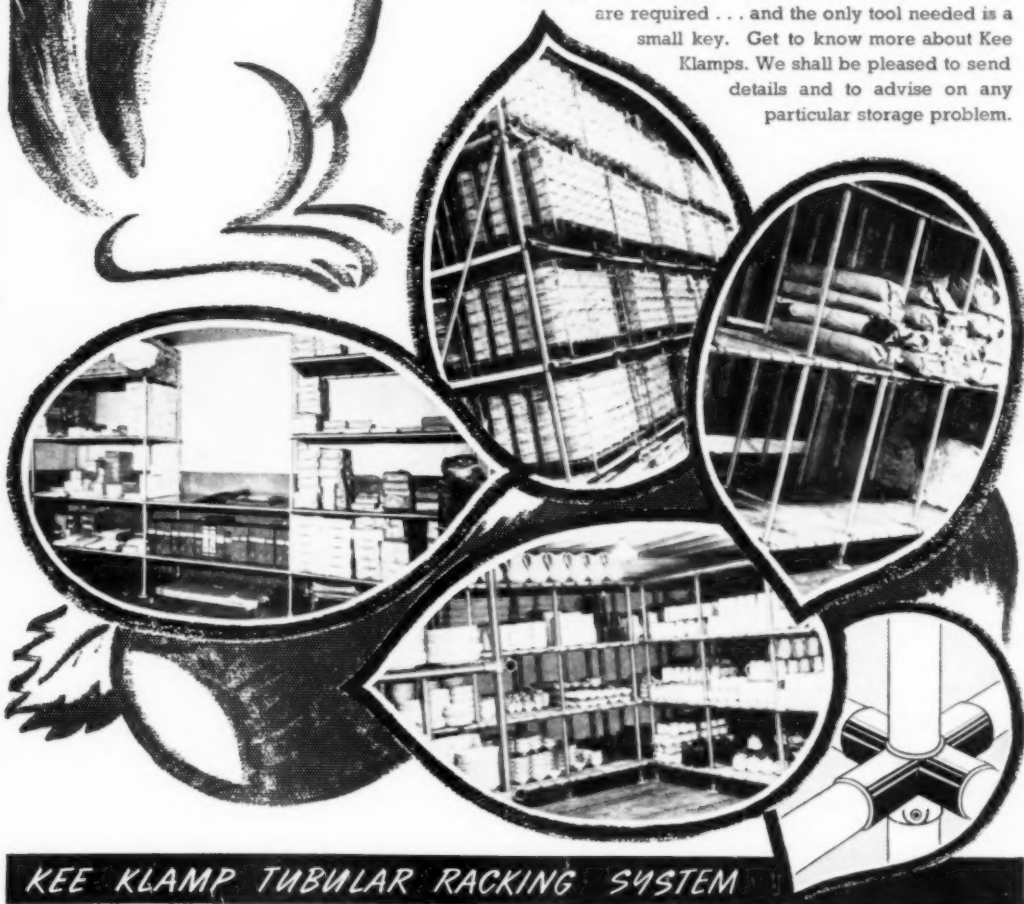
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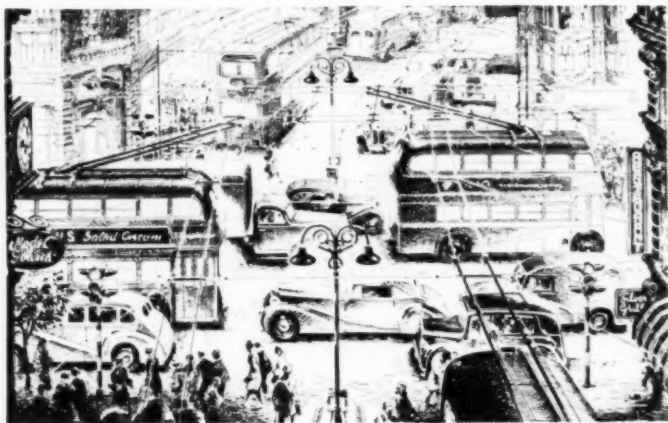


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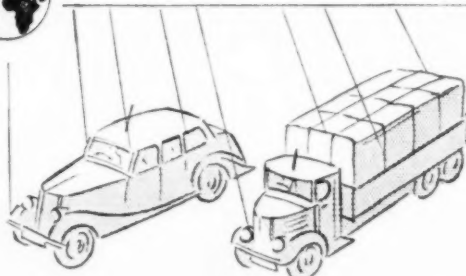
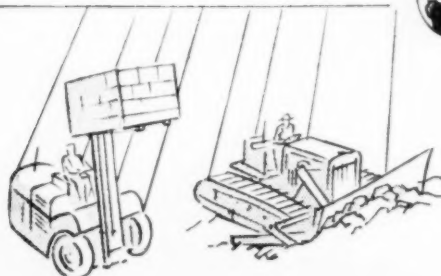
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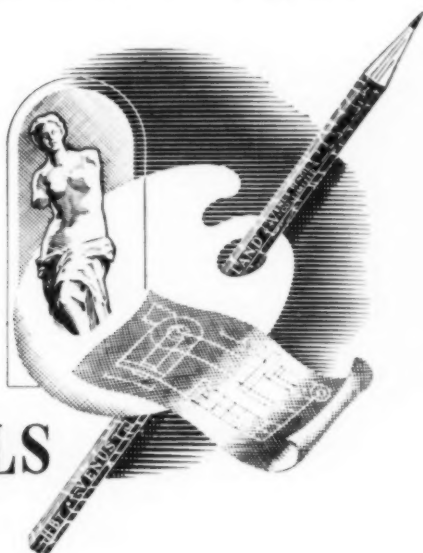
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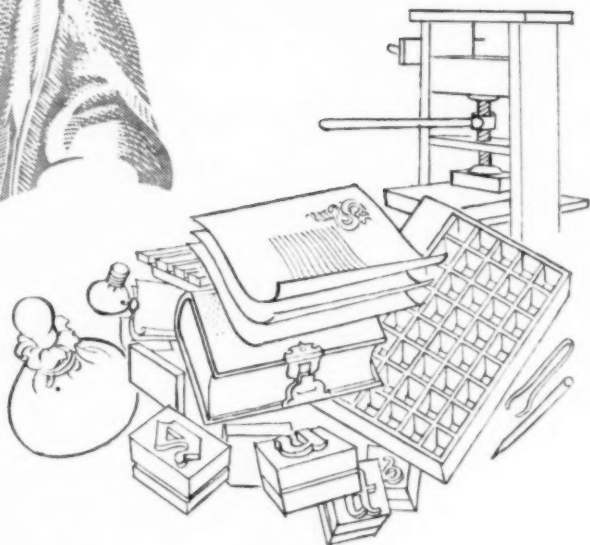
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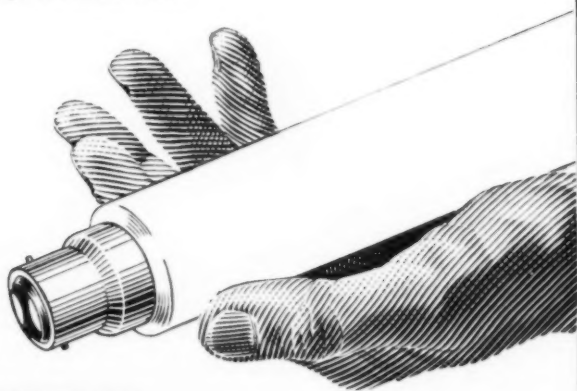
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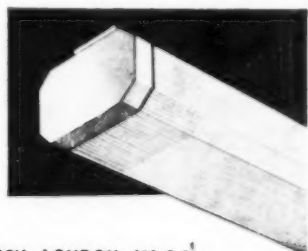
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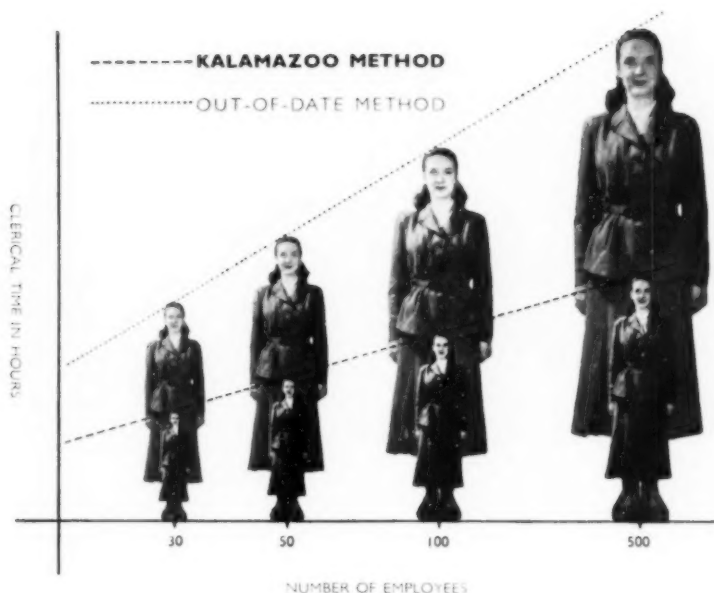
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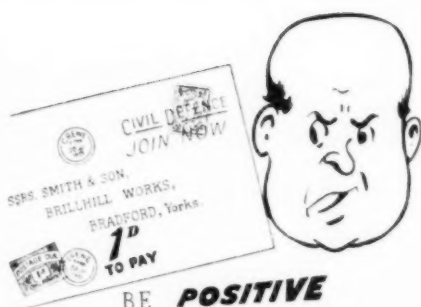
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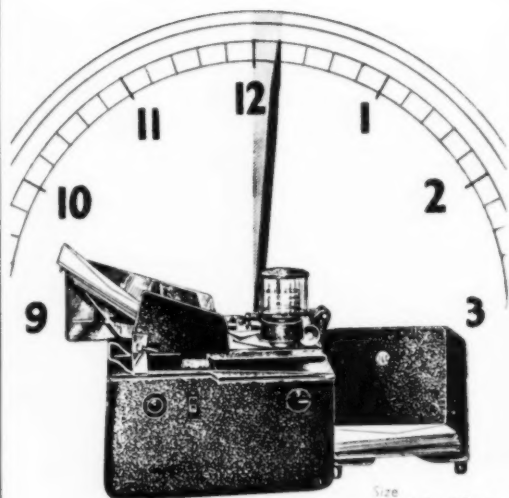
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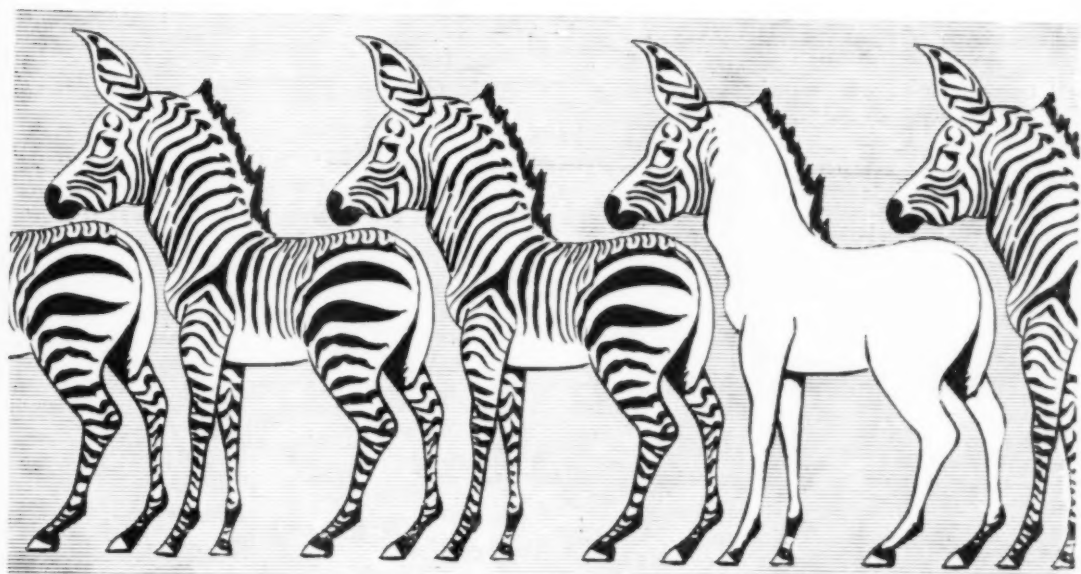
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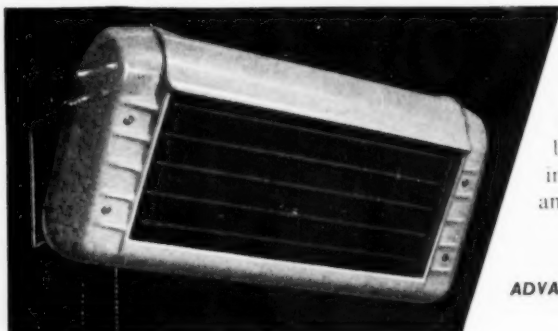
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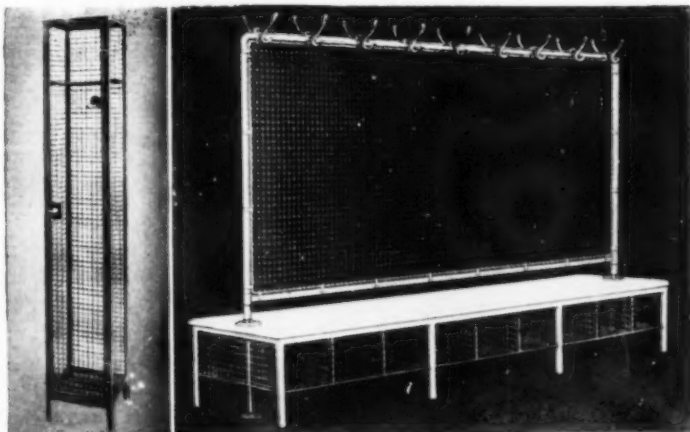
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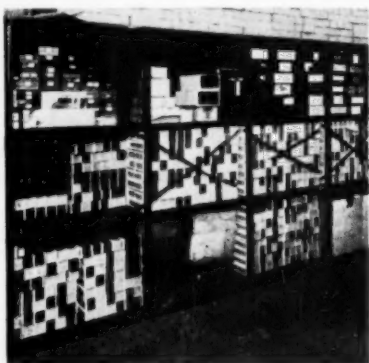


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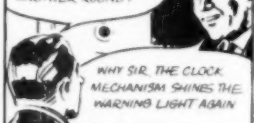
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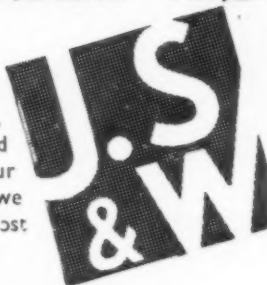
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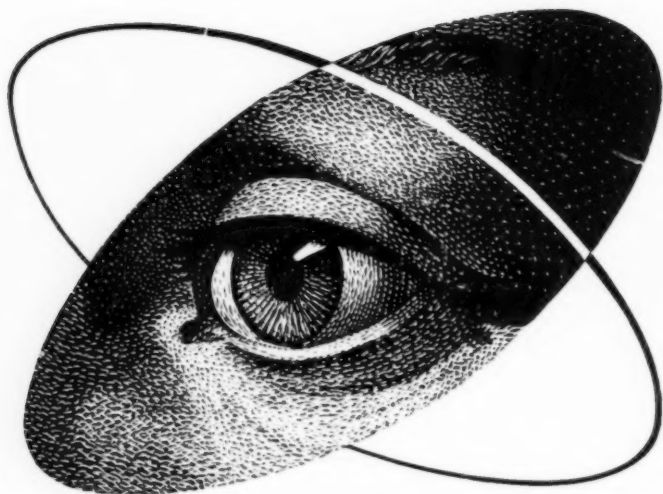
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of the

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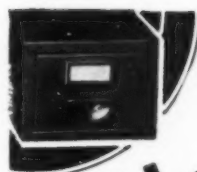
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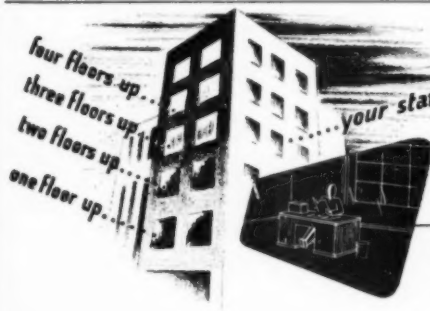
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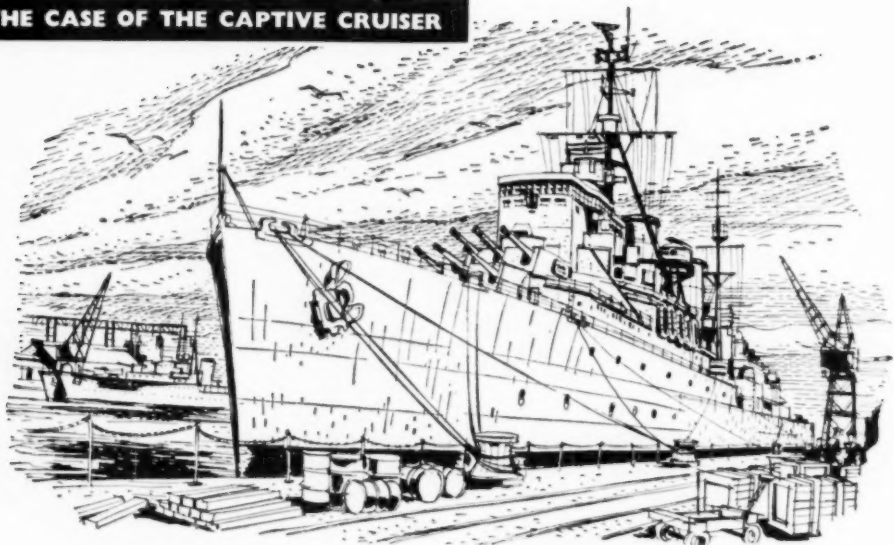
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THE CASE OF THE CAPTIVE CRUISER



Was there a "secret weapon" to set her free?

HIS MAJESTY'S Dockyards, serving one of the largest naval forces in the world, were faced with a serious problem.

World War II had suddenly increased their inventory of ships' supplies to almost 300,000 items. Handling this increase with hand accounting methods had become almost impossible despite extra manpower and overtime.

As a result, the speedy movement of stock to keep ships supplied was held up by paperwork.

To free these ships, a new accounting system was needed at once. The Admiralty directed an immediate investigation of all methods and systems. Machine accounting specialists of Burroughs Adding Machine Ltd. were called in.

After investigation, Burroughs specialists suggested a simplified system for handling stock cards and ledgers. They specified Burroughs High Speed Accounting, Duplex Adding, and Adding-Subtracting Machines for the job. The authorities acted on these recommendations.

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MR. J. E. FOOT, Superintending Naval Store Officer of one of H.M. Dockyards, examines one of his Burroughs High Speed Accounting Machines.

With him on the right is **MR. S. F. HARMER-ELLIOTT**, one of the Burroughs men who helped solve the Case of the Captive Cruiser.



For expert advice in any field of business figures . . .

CALL IN Burroughs 

The MARCH of BUSINESS

THE B.E.E. AT BIRMINGHAM

ONCE again, the Business Efficiency Exhibition gives the harassed businessman the opportunity of checking up on the vast range of office machinery and equipment available to help him in his task. And once again BUSINESS gives a comprehensive guide to the Exhibition to make it easier for him.

This year we are honoured by personal messages from Sir Walter Monckton, K.C.M.G., K.C.V.O., K.C., M.C., M.P., Minister of Labour, who is to open the exhibition, and from Mr. B. B. Dyer, M.A., president of the Office Appliance and Business Equipment Trades Association, the organizers of the Exhibition.

In addition to these, and to the normal indexes of exhibitors and stand numbers and products, we publish a series of progress reports by an expert on office machinery, Mr. R. E. Simpson, M.B.E., until recently of the Organization and Methods department of the Ministry of Food. These reports both highlight the more recent developments in the various fields of machinery, and, at the same time, place them in perspective for the benefit of the newcomer to office mechanization. So rapid have been recent advances (the quantitative advance may be seen from the chart on page 41), that even an expert may well be grateful for the opportunity to pause and take advantage of the brief, but informed, summary offered here.

★ ★ ★

AN Institute of International Industrial and Labour Relations, the first of its type in the United States and probably in the world, was set up last June at the New York State School of Industrial and Labour Relations of Cornell University. Today, it is in full swing, with educational programmes for groups from Turkey and Western Germany, courses for Cornell students on labour relations in foreign nations, and several intensive research projects in the field of international indus-

trial and labour relations. In addition, students from England, Japan, Italy, Austria, Sweden, France and other nations are studying industrial and labour relations in the United States. Scholarships are available for both undergraduate and graduate students as well as graduate assistantships for qualified students for which foreign students are invited to apply.

★ ★ ★

THE TEACHING MINE

THE somewhat arid controversy between university and technological institute has been broken by a new idea. Developing a theme originally put forward by Professor M. L. Oliphant, a writer in the *Twentieth Century* points to the modern medical school as an example of a field in which modern discoveries are rapidly put into concrete practice. In no other practical science, he suggests, do new advances made by science spread so rapidly; at the same time an undesirable imposition of vocational teaching on the universities is avoided. Professor Oliphant's idea is that clinical

work done in the "outside workshops," the teaching hospitals, may be the clue to the best way of organizing other applied sciences.

A "teaching mine" has been suggested, where a mining engineer would get his training under senior engineers of the mining department, who would also be members of the university staff. The scheme would be readily adaptable to regional universities associated with localized industries—a professor of ceramics in a teaching pottery at Stoke, for instance, or similar close links with cotton at Manchester or wool at Leeds. The co-operating works would be fully engaged in normal production, just as a hospital goes on with the treatment of patients, undisturbed by teachers or students.

★ ★ ★

OF seven million women employed in industry in Britain, only 1,200,000 are members of a trade union. These figures are supplied by the Trades Union Congress, which has started a campaign to recruit more women members for unions. Of the seven million, over three million are married and the majority of these are over

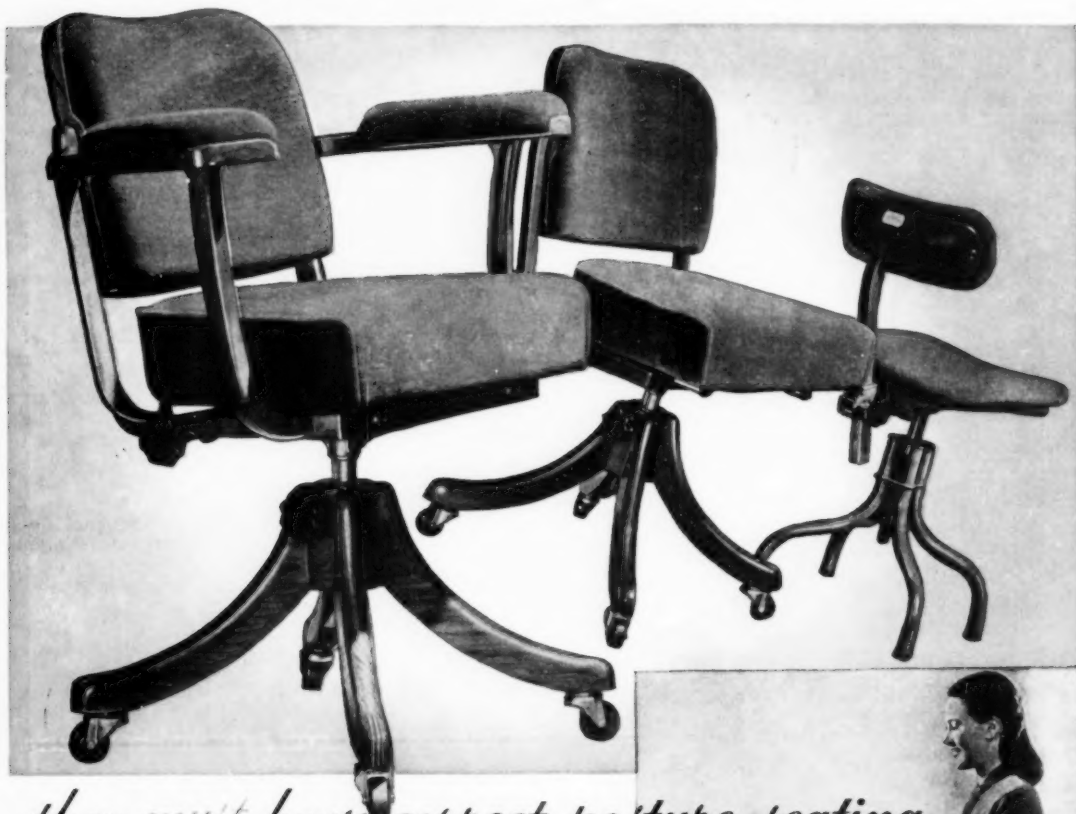
★

Two presentations made recently at G. A. Harvey and Co. (London) Ltd., seem to prove that long service is a characteristic of both management and staff. In the upper photograph is Mr. Sydney Harvey, chairman of the company who received from his employees an illuminated volume, commemorating his 50 years of service with the firm. Lower right is Mr. Edward W. Taylor, who has just left the company's service, having completed 57 years service—an all time record for Harvey's. He joined the firm at the age of 13½ in 1894.

★



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SPECIALISTS IN SCIENTIFIC SEATING FOR INDUSTRY & COMMERCE

35. Mrs. M. McKay, a former Lancashire cotton worker and now secretary of the women's organizational department of the T.U.C., is touring the country asking for trades councils to help in the campaign by setting up local women's committees. These would keep in touch with the women's committees of the T.U.C.

CANTEENS—NOT CIGARS

LAST month BUSINESS stressed the immense investment in new capital equipment that British industry had made during the last few years. Sir Montague Burton thinks that it has not been nearly enough. "Those engaged in industry," he told the annual meeting of his company recently, "are disturbed that, while expansion of the most minute character is frowned upon in official quarters, and obstacles are placed in the way of development, over £5,000,000 sterling is expended daily on the importation of non-essential luxuries.

"An application for the erection of a canteen is turned down, while anyone can fill his cellar with imported wines. An application to import a piece of vital equipment costing a few hundred pounds is refused, while anyone can fill his cabinet with imported cigars. If only 10 per cent. of the £5,000,000 were devoted to equipping industry and agriculture with the tools needed urgently, the country's economic position would take a new and vigorous lease of life. If the necessary facilities were granted for modernizing industry and agriculture, the need for subsidies, rationing, control and other war-time relics would soon disappear. . . . The more Margams, the more skill, and the more efficiency, the less need for dole in all its forms."

And, very logically, Sir Montague goes on to demand the reform of the taxation system so as to allow of machinery being written off more quickly—a demand which most businessmen will share.

BRITAIN'S gas turbine air liners, the jet Comet and the turboprop Viscount, have now totalled over 2,500 hours in the air,

FEBRUARY, 1952

SALIENT FIGURES OF THE MONTH

		Latest Month	Increase (+) or Decrease (—) on	
			Month Ago	Year Ago
"BUSINESS" INDICES				
Production ...	(1946=100)	* 144.5	Same	+ 6.1
Purchasing Power ...	do.	* 110.7	+ 0.6	+ 0.7

MANPOWER

Total manufacturing				
Industries ...	(thousands)	* 8,748	+ 2	+ 163
Cotton spinning and weaving	do.	* 335.6	+ 0.4	+ 4.8
Coal (on colliery books)	do.	695	+ 1	+ 9
Reg. unemployed (U.K.)	do.	323	+ 33.2	— 3.1

PRODUCTION

Index of production ...	(1946=100)	* 159	+ 16	+ 4
Coal (average weekly output) ...	(thousand tons)	4,557	+ 50	+ 153
Steel ingots and castings (do.)	do.	316	+ 15	— 20
Cotton yarn (do.)	(million lb.)	* 20.2	+ 1.5	+ 0.6
Woven wool fabrics (do.)	(million linear yards)	* 33.04	— 0.19	— 9.80
Passenger cars (do.)	(thousands)	10.29	— 0.19	— 1.34
Commercial vehicles (do.)	do.	5.46	+ 0.01	+ 0.01
Permanent houses completed	do.	* 17.72	+ 0.55	+ 0.12

TRADE

Value of imports ...	(£ millions)	† 314.1	— 14.7	+ 79.2
Value of exports ...	do.	† 213.6	— 21.7	+ 1.8
Freight train traffic (million tons)	do.	† 5.75	+ 0.13	Same
Retail sales ...	(1947=100)	157	+ 11	+ 10

FINANCE

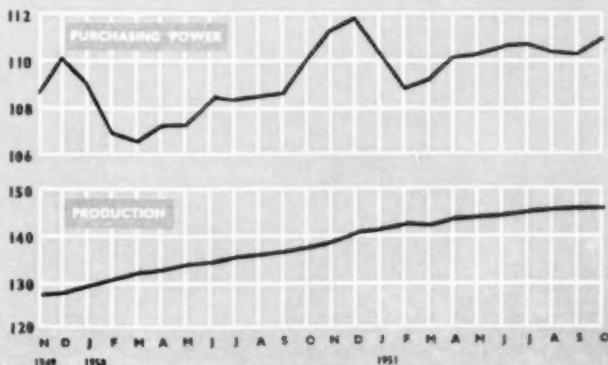
Currency in circulation ...	(£m.)	1,320	+ 6	+ 69
Deposits in London Clearing Banks	do.	6,189	— 15	— 62
Provincial cheque clearings (average working day)	do.	7.44	+ 0.54	+ 0.12

WAGES AND PRICES

Weekly wage rates ...	(1947=100)	125	+ 3	+ 12
Retail prices ...	do.	129	Same	+ 13
Raw material prices ...	(1949=100)	† 180.8	— 1.4	+ 4.1
Mech. eng. ind.	do.	† 142.6	+ 0.6	+ 17
Elec. machinery	do.	† 159.0	+ 0.2	+ 16.8
Building, etc.	do.	† 132.2	+ 0.4	+ 21.1
Import prices ...	(1950=100)	134	+ 1	+ 24
Export prices ...	do.	126	+ 1	+ 22

*October. †December. ‡Four weeks ending November 5th
All other figures refer to October.

BUSINESS INDICES (1946=100)



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and covered more than 800,000 air miles. One single Comet alone has logged 90,000 miles of overseas flight. The U.S. Civil Aeronautic Administration puts Britain's lead in gas turbine machines at "from three to five years." Overseas orders for the Comet and Viscount total more than £7,500,000 to date.

★ ★ ★

HOSPITAL EXPERIMENT

MODERN management techniques are used not only by businessmen, but also by executives in national and local government and nationalized industries and services. Since these are of larger scale than all but a few businesses, specialization can be taken farther. Experts can be, and are, employed to concentrate on improving organization and methods, free of routine executive work.

The results they achieve are often relevant to problems encountered in business life; the data handled are different, but the methods are the same. Thus businessmen will be interested in an experiment in hospital costing now being carried out by the Nuffield Provincial Hospitals Trust. This will, it is hoped, provide, for the first time in this country, a basis of comparison of departmental costs in different hospitals.

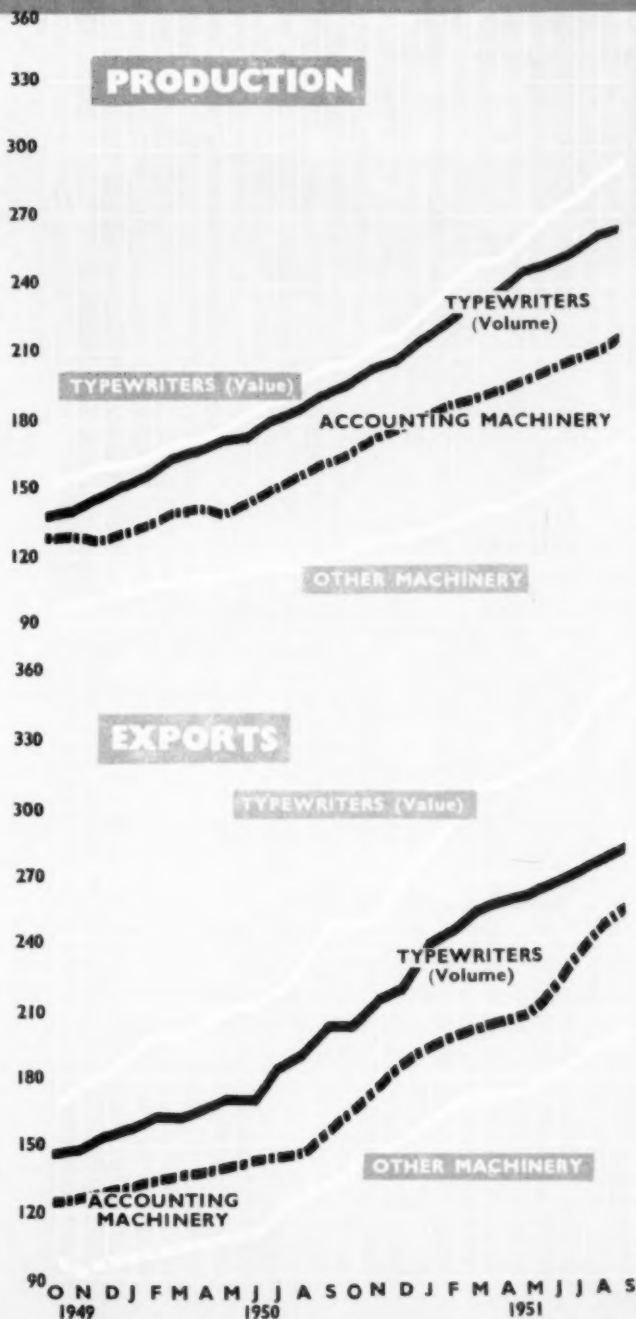
The trust has applied the accounting technique of standard costs in 46 hospitals of different sizes and types from seven hospital groups. Simultaneously, the King Edward's Hospital Fund has been making similar experiments in London hospitals. By the spring both bodies expect to present either a joint report embodying an agreed assessment of results, or a reasoned analysis of separate views, to the Minister of Health.

Standard costing is only one of the techniques now being used to improve hospital management; time and motion studies have also been made of nurses at work in the ward unit. The "typical num-

HOW THE CHART IS CALCULATED

The indices of output and exports of office machinery are twelve-month moving averages expressed as a percentage of the corresponding average monthly figure for 1948.

TRENDS IN OFFICE MACHINERY



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ber" of journeys made by a nurse on duty was found to be between 300 and 400, with a total distance of from two to two and a half miles a day, without taking account of movement round the bed and excursions outside the ward unit.

Tentative conclusions reached from these experiments are to be demonstrated practically in the design of two experimental wards, one medical and one surgical. The first is at Larkfield Hospital, Greenock; the second at Musgrave Park Hospital, Belfast. Both will serve as "live laboratories" for testing some of the investigation's work.

★ ★ ★

RETURNS from 31,564 building sites with 374,319 workers in June showed that 28 per cent. of the sites in England and Wales had incentive schemes for 41 per cent. of the main contractors' labour. In Scotland, where incentive schemes are newer, the figures were 11 per cent. for sites and 12 per cent. for men.

In housing works as a whole in England and Wales, there were incentive schemes on 31 per cent. of the sites for 44 per cent. of the men, but on housing sites of £10,000 and over in value, on which more than two-thirds of the total labour was employed, the figures rose to 40 per cent. for sites and 53 per cent. for men.

★ ★ ★

SUCCESSFUL MINING

THE success of the coal mining industry in the U.S.A. is due in a large measure to the belief, shared by management and miners, that their respective ends will be served only by increased productivity at lower cost.

This is the first broad conclusion of the team sent by the Anglo-American Council on Productivity to the United States.

Modern mining is too complicated a business for one type of person to master in all its details, and requires specialist help. The Americans have been successful in welding management into a team, without weakening, but strengthening the operational staff. The reasons for this, according to the report, are:—

(1) General acceptance that

FEBRUARY, 1952

PEOPLE

DDDD

PLACES

★ PRODUCTS ★



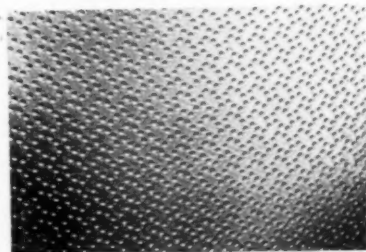
COLD CONVEYANCE—The "Arctic Princess" is one of a fleet of 10-ton (800 cubic ft.) articulated mobile cold stores which John Connell (Bromley), Ltd., are putting on the road. First independent unit of its kind in Britain it carries food from ship to shop at 14 degrees F.



PATTERN PARADE—When a London firm of woollen merchants commenced planning for new showrooms they faced the problem of showing some thousands of cloth patterns in a limited space. The answer was an ingenious arrangement of hinged frames carrying samples of cloth on each side, reminiscent of visible office systems.



BRUSH APPOINTMENT—Mr. Ian T. Morrow, formerly of Robson, Morrow & Co., has now been appointed to the board of the Brush Electrical Engineering Co., Ltd., where he will act as Financial Controller of the Group. Previously, he acted as Financial Adviser.



CAN YOU SEE THROUGH THIS?—Not a fly's eye under a microscope nor the moon through a telescope, but a close-up of a piece of Festival frosted, rolled glass. Based on the crystal structure of the mineral Apophyllite, the glass has an easy to clean "pimpled" surface, gives reasonable obscurity and is pleasing.

PPP CONTINUED



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PEOPLE ★ PRODUCTS ★ PLACES

all that matters is the final result;

(2) The development of the service departments in response to the demands of the operational staff themselves;

(3) The inclusion of the service staffs, many of whom come from the operational staff and will go back to it, in the team;

(4) Collaboration "on the job" and not between offices; and

(5) Identification of the individual with the achievements of the company.

To achieve this end American mine management makes wide use of budgets, forecasts and production standards. Management approaches its task in an orderly manner, working out, by objective study and analysis of operations, costs and conditions, the level of performance that can reasonably be expected for each unit, mine and section, and seeking to provide the means and, in particular, the helpful supervision necessary to attain this performance. It accepts the duty of constantly looking ahead and experimenting with new techniques, and is not afraid to profit from failures. Budgets and standards for management control are often built up from the foreman level; they are simple instruments designed to suit local circumstances.

★ ★ ★

LAST month, **BUSINESS** adjured its readers to "Count Your Blessings in the New Year" in spite of the dismal headlines in the daily press. A reader of **BUSINESS**, Mr. Ralph Edwards, Chairman and Governing Director of Edwards Motors (Doncaster), Ltd., has had the same idea. In his spare time Mr. Edwards writes songs—he has written sixty-eight to date. His latest bears the title, "Why Worry," the rejoinder made by his wife and children when he started grumbling about business conditions. The song sold 10 000 copies in four days and has been widely recorded and broadcast.

★ ★ ★

SAMPLING SAVES TIME

TWO items of good news arrived over the holidays for office staffs in factories and elsewhere.

(1) The next Census of Pro-

FEBRUARY, 1952



KANGOL DIRECTOR—New member of the board of Kangol Holdings, Ltd., is 39-year old Mr. Herbert A. Walford. The Kangol Companies are the world's largest beret manufacturers and Mr. Walford will be principally concerned with the marketing side of the business. He was formerly managing director of Emu Wool Industries, Ltd., and chairman of several of the subsidiaries, having been responsible for the founding of the Emu Company.



IT'S MAGIC—Tools (providing they are made basically of steel) will not get mislaid or out of the way when this gadget is used. It is the magnetic Magi-Rack, and your pliers, spanner or screwdriver will stick to it like flies to flypaper.



JOINING THE BOARD—Mr. H. M. Woodhams, C.B.E., F.R.Ae.S., M.I.P.E., managing director of Sir W. G. Armstrong Whitworth Aeroplane Co., Ltd., welcomes Air Commodore W. Wynter-Morgan, C.B.E., M.C., who has been appointed to the board. Recently returned from the R.A.F., Air Commodore Wynter-Morgan is a leading authority on air armaments.



OVER TO YOU—Part of the special service for out-of-town businessmen staying at the Strand Palace Hotel in London is a new message-recording system. A record is taken of each caller's message and the guest can have it played to him over the telephone in his room or in a special sound proof cubicle in the main hall.



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intermediate shuttle return feature permits tabulating over various columns with automatic selection of a wide range of operating functions. A normaliser feature, which immobilises the carriage, enables the machine to be used for all normal duplex adding listing requirements.

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duction, which will be carried out in 18 months' time, will contain fewer questions than before for the harassed office worker to answer, without any real loss, it is to be hoped, of essential figures.

(2) The great majority of the smaller firms in each trade will no longer have to fill up a form. This is made possible because, for the first time, the practice, which has been adopted and found workable abroad for a good many years, of taking in a sample on a systematic basis among the smaller firms will be introduced. Not merely will this in itself save labour and time in the factory office, but it will also enable the central tabulating people to give much earlier estimates than before of such things as total sales, total materials used, total stocks and so on.

At long last, it seems, the view has been adopted that it is better to have a 95 per cent. accurate figure within a year than to have a 100 per cent. accurate figure, if you are lucky, at the end of three years, in this practical business field.

The smaller firms' details will be put in proper perspective, and the authorities are to be congratulated on a courageous, but very sound, decision. It is vital, however, to ensure that the details provided in the sample returns are as accurate as is conceivably possible. Greater attention, in fact, must be paid to the wording and content of the form. This will be readily appreciated when it is realized that the totals from the sample by groups will serve as a basis for multiplying up to give the estimates for the groups as a whole.

* * *

IMPORTANT developments in food preservation may stem from work being done in America on radiation. Experiments at Columbia University, for instance, have shown that raw, unpasteurized milk can be kept for as long as seven weeks without turning sour, if it is irradiated by a two-million volt X-ray machine. Flavour, nutritive value and appearance of the milk remain unimpaired. Tests are now being made to ascertain long term effects (if any) on consumers. Surgical supplies may possibly be preserved in an antiseptic condition by this method.

FEBRUARY, 1952

Does your Office have a B-day?

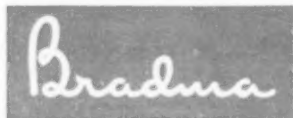


Most offices have their weekly or monthly BUSY day—when, on top of daily work, some routine job has to go through. It may be wages, statements, works production sheets, circularising and so on. Make your B-day a BRADMA day—and get the extra work done with the efficiency and precision of a planned military operation. BRADMA mechanises routine clerical work, one operator producing as

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How the Sponsor can Control the Making of His Industrial Film

By PAUL NUGAT

A top executive who sponsors an industrial film need not be concerned with technical know-how. That is the job of the film company. But there are a number of vital "control points" where the sponsor should exercise his authority to see that he gets what he wants in the film for which he is paying, whether it is for public relations, sales promotion, staff information or training.

THE businessman who ventures for the first time into the realm of film sponsorship faces an entirely new set of problems. Accustomed by habit and training to study blue-prints and examine samples before committing himself to his order book, he has to fashion a new measuring rod.

True, as this article will show, there are many valuable lessons to be learned from the experience of firms who have already sponsored successful films. But film is a variable commodity. No one method can be regarded as a blue-print *par excellence* for every firm in every circumstance.

However, there are a number of uniform control points where the top executive, after consultation with the company making his film, can—and should—exercise his full authority.

First, no good purpose is served in having a film made unless the objective is clear-cut and the audience, through whom the objective is to be reached, clearly envisaged. There are matters which

only the sponsor himself can decide.

The next step is to select a film company to tackle the job. Most film companies advertise their services, notably in specialized journals such as *Advertisers' Weekly*, and probably the safest way of picking one is to ask to see a selection of films and then make a note of the names of key personnel employed in their making.

Second only to the quality of the productions is the personality of the producer and director. Technical know-how can be taken for granted in dealing with a reputable film company. What the sponsor has to satisfy himself about in each case are the tact of the film company's staff, their ability to win the co-operation of his administrative staff and the factory workers, their quickness in grasping the essential features of a particular enterprise.

Price is a further important consideration in selecting a film company. For example, John Laing and Son, Ltd., invited 10 companies to tender for making their first

film, "Moving Earth." They admit they bought their first film on price, influenced, as a second consideration, by the personality of the producer. A variation of this procedure was used by Powers-Samas Accounting Machines, Ltd., and Stanton Ironworks, Ltd., for their first films—"An Introduction to Punched Card Accounting" and "Flexible Joints for Cast Iron Pipes" respectively. These two firms prepared their own scripts and then obtained quotations for filming it—in both cases from companies which had approached them.

A company having been selected, the procedure favoured alike by most film companies and most experienced sponsors is to commission a written treatment of the subject to be filmed, in which the substance of the film is communicated in visual terms. The treatment is written by a script-writer who has familiarized himself with all those aspects of the sponsor's business activities which have some bearing on the contents of the film proposed. It is a film in embryo, and is regarded as a rough sketch to be subjected to revision, complete rewriting, large and small amendments, according to the criticisms of departmental chiefs, the technical staff, and others.

Some film companies prepare the film treatment at their own expense, and if the sponsor through dissatisfaction or through changed circumstances decides to break off negotiations at this stage, the loss



Frames from a film made by Stanton Ironworks.

is borne by them. Others make no charge for the treatment unless further negotiations are broken off, when a fee to cover the script-writer's salary and expenses is charged. The difference in these policies should be seen for what it is—the ability of one company financially to stand the non-materialization of a film contract, where another cannot.

In the case of "Paper Chain," the sponsors—Wiggins, Teape and Co. (1919), Ltd.—undertook to pay the film company £400 for writing the script, payable whether or not the film was finally made.

The Shooting Script

After the film treatment, the next stage is the shooting script and if they so wish sponsors can wait until this control point is reached before continuing talks on finance. For the shooting script is no more than the technical lay-out of the film treatment. Additional scenes or the elimination of scenes to conform with the desired running time of the film, to bring the

production costs within the sum the sponsor is ready to spend, cause little extra work and no additional expense. When final agreement has been reached on the shooting script, the film company are in a position to make a firm quotation for making the film. Payment is usually made in two or three instalments. Where the money is part of an annual advertising appropriation, as it was at Stanton Ironworks, Ltd., payment may be timed so as to spread the total cost over two annual allocations.

On agreeing to the script in its final draft, the sponsor can temporarily step into the background, having appointed a senior member of his staff as his personal representative and liaison officer. The latter's duties are multiple and call for a man with a personality that commands the willing co-operation of every member of the staff, whose work and normal routine will be interfered with on the arrival of the full production unit. Together with the producer or director, he will survey each section of the factory destined to be "shot." He will introduce departmental heads, foremen and the workers who will appear in the film in their workaday rôles. He will note the "props," the power points, the black-outs, requested by the film makers, and where and when they will be required in the filming schedule.

He may sound like a whipping boy, the genial slave of all comers, but beneath the surface his mind is at work on how to keep factory output from being interfered with more than can be justified by the priority need of keeping the shooting schedule running to time. For any breakdown in this schedule can have serious consequences for the film. The most expensive item in film production is the wages bill. Loss of normal working hours due to faulty liaison work—or bad weather on an outside location—tends to stimulate undue haste in an effort to cut the financial loss. The result may well be a shoddy film.

"Rough Cut" Stage

The sponsor himself again enters upon the scene when all the film's footage has been shot, assembled in its correct sequence and trimmed to its approximate length. Known as the "rough cut," this provisional assembly of visuals affords the sponsor a further opportunity to exercise some control over his film.

The amount of this control depends to some extent on the producer. Some favour showing their sponsors a very rough "rough cut" in which every shot taken is presented for criticism and selection; others, and probably the majority, favour a "rough cut" resembling the final shape of the film, and yet



Some sponsors rely entirely on the film company; others use their own staff for certain technical matters. At Powers-Samas for example, Mr. L. Winter writes the firm's own scripts.

sufficiently elastic to allow the sponsor to alter the emphasis of the film by the inclusion or exclusion of any footage available.

The sponsor's second duty is to listen to the commentary, the dialogue (if any), and the sound effects. A commentary may read well but sound less convincing when spoken and recorded on the sound track. All too frequently the commentator has no mental picture of the eventual audience. This is especially noticeable in instructional films, where it is easy to let the voice unconsciously "talk down." Patronage is the death-knell of a film.

A further lapse in time occurs, during which an intricate series of processes is performed over which the sponsor has no control. Then he is again invited to view his film at the "cutting copy" stage. It is not an occasion for major surgical operations. Although there is still time for minor adjustments to be made, the marriage between the sound-track and the visuals is about to be solemnized, and what is really required of the sponsor is his final blessing. The sponsor, in effect, is present at a rehearsal of the marriage ceremony.

Making the Prints

Through a double-headed projector, the sound-track and visuals are projected in synchronization on to the screen. Here the sponsor should make allowance for the condition of the projected print, which will be scratched and dirty and will never be seen by an audience. Carefully stored away in a dust-free, fire-proof vault lies the original negative of the film, waiting to be cut and assembled to match the dirty print as soon as the sponsor's final approval has been given. From this negative not only the show copy for the film's premiere is printed, but all the prints needed to satisfy the demand in Britain and overseas.

Some sponsors favour Press shows; some favour joint Press and invited audience shows; some believe in omitting the Press. It is a matter of policy and the last word rests with the sponsor and his associates. Broadly, the content of a film determines the composition of a first audience. To those who are Press-shy, one can only say that the film has yet to be made

Seven Control Points for Sponsors



1. AIM

Fix your objective clearly.

2. AUDIENCE

Decide whom you want to reach.

3. PRODUCER

In selecting a film company, the personality of the producer and director is important. Technical know-how of reputable firms can be taken for granted.

4. SCRIPT

Approve the final draft of the shooting script. Then appoint a senior man as liaison officer between you and producer, until—

5. "ROUGH CUT"

Check the emphasis and coverage shown in the provisional assembly of visuals.

6. COMMENTARY

Listen carefully. You know your eventual audience better than the producer does. Don't let the commentator "talk down".

7. LAST CHANCE

The "cutting copy" stage. Here there is still time for minor adjustments before sound track and visuals are "married".

that was not of interest to at least one group of specialized newspapers or magazines. Perhaps the most all-round beneficial premiere is the one where the showing of the film is followed by an informal discussion.

Methods of distributing prints of a film are also subject to internal policy. It so happens that each of the four firms mentioned in this article have preferred to keep a controlling hand on the hiring of their films.

An instructional film like "An Introduction to Punched Card Accounting" requires the presence of a lecturer. A hard-hitting sales film would not be effective unless the whole message was contained in the film itself. It can with advantage be placed in a good commercial film library. Reports on where and to whom it has been exhibited will periodically be forwarded to the sponsor, who, although relieved of the responsibility of servicing the prints of

his film, can continue to exercise his control over distribution of the film whose copyright he holds.

A Question of Costs

Even to write one paragraph on the cost of a sponsored film is to invite a spate of "interested" correspondence, refuting the figures quoted. Understandably enough. For, there is the film company making a one-reeler (10 mins.) for £600, while another will make a one-reeler for £1,500. The two films are no more comparable than the Austin Seven and the Rolls Royce. A Local Authority commissioning a simple Road Safety film, or an industrialist requiring a news-reel of some special occasion like a Royal visit or the Sports Day, would surely demur if the budget exceeded £600. The same industrialist, planning a film to raise his firm's prestige at home

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How Office Appliance Manufacturers Train Customers' Staff

By ROBERT SPARK



"OUR responsibility begins, not ends, with the sale of the machine."

With these words a leading manufacturer of office equipment summed up his firm's policy on the important subject of training operators to work modern office machines. He might well have spoken the words on behalf of the whole office appliance industry; for the industry has ably tackled a problem created by its own progress. As machines have become more and more efficient and ingenious, so they have often become more complicated. To get the best out of them trained operators are essential. Only in this way are customers kept satisfied and manufacturers saved from excessive repair and maintenance problems.

Chief among the complicated office machinery of today is punched card equipment. Here both Powers-Samas Accounting Machines (Sales), Ltd., and the British Tabulating Machine Co., Ltd., have for many years set a fine example of well organized and elaborate facilities—not only for training operators, but for giving executives, such as cost accountants, company secretaries, a clear insight into punched card methods and equipment.

At Powers-Samas the executive course—for a maximum number

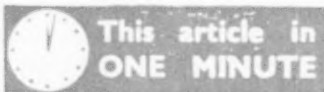
of thirty at a time—lasts three weeks. Two weeks are devoted to the machines—both theory and practice—the third week to lectures on applications of punched cards and on the machines for different jobs.

The training of operators and supervisors normally takes two to

three weeks. In some cases staff are taught only one job (ie., punching); in others, the girl may be trained to do two jobs. When the trained operators return to their firm, a Powers demonstrator will be on hand to ensure that they—and the customer himself—are happy about their jobs and responsibilities with the new equipment. She stays as long as is necessary.

Powers also cater for the girl who has just left school to begin her career. After training, girls are placed in suitable jobs. The training school is located in Powers' new London building, where there are lecture rooms as well as machine rooms, all well equipped.

The British Tabulating Machine Co., Ltd., also have special training premises, situated since last year at Moor Hall, Cookham, in Berkshire. Here, in attractive surroundings, is what is the most impressive training centre yet set up by any British office equipment manufacturer. Instruction is given in every stage of Hollerith operation, from card punching to the deepest implications of the Hollerith technique as an instrument of management. The centre is residential, and accommodation is planned for a maximum of 150 students, with 17 classes running concurrently. Recreational facilities



Probably no other group of manufacturers take the problem of training their customers' operators more seriously than the office appliance industry. The facilities they provide are comprehensive, well organized and widespread. In nearly every case, training is free of charge and even replacement operators will be trained without cost. The industry's responsibilities do not end at this point, as they make a feature of checking up on new installations to see that the machines are working satisfactorily and that operators are competent and confident.



ties include two lounges, a billiards room and a television theatre.

For operators the course lasts five weeks. It includes machine operation; setting up machines; rules governing the operation of various features on tabulators and other equipment; and how to avoid and correct faults. As with the Powers scheme, close liaison is maintained with the customer, so that employees are fully taught about their particular installation.

For supervisors the course is basically the same, with an extra week's study of the best methods and principles of staff supervision.

The executive course—of nine working days—covers a much broader field. First comes a detailed review of all Hollerith equipment; second, its application to modern accounting methods and statistical work.

There are also subsidiary, refresher and special courses (dealing with a particular machine, for instance). These are both theoretical and practical. Classes are limited to a maximum of nine, so that individual tuition can be given.

For a new user of Hollerith equipment, training is free, except for accommodation charges. The number trained is based on the size of the installation. There is a fee for training operators at later dates. For the executive course the same rules apply with certain exceptions.

Remington Rand, Ltd., have a training school in London for accounting machine operators, and also do training at their provincial branch offices. A minimum of

two operators for one customer is trained, to allow for holidays, sickness, etc. Instruction is free of charge and always available. Thus if an operator leaves a firm, a replacement will be trained without cost. If a customer has no staff suitable for training, Remington's will provide them.

Where possible, operators are trained from the beginning on the actual job they are to do—for instance, payroll work—and on the same machine, or same type of machine, they will eventually use. In some cases this policy is taken a step further; the trainee uses the exact stationery which has been prepared for her firm; she will, in fact, be doing work while under instruction.

The course lasts 14 days. In the pleasant and modern classroom there are usually about 14 trainees at a time. A careful record is kept

of each trainee's progress and a report prepared. The trainee signs the report, one copy going to her firm, and another, with general remarks, to her supervisor.

When an operator has completed her training, a highly trained Remington Rand demonstrator is sent to her firm to remain with her until the installation is running smoothly.

The National Cash Register Co., Ltd., divide their free training facilities into three departments—cash registers, cash registers for self-service stores, and accounting machines.

For cash registers instruction is usually given on the customer's premises, but when required, assistants may be trained at National's London offices. When a machine is sold, a system of operation is prepared to suit the customer's needs. This system is incorporated

Upper Left, a corner of Remington Rand's training school in London.

Upper right, one of the Hollerith machine rooms at Moor Hall, Cookham.

Right, an executive class in session at Powers-Samas Accounting Machines (Sales) Ltd.





Training is backed up with helpful instruction booklets. These three are by IBM United Kingdom, Ltd., and the Dictaphone Co., Ltd.

in a procedure book, from which the training programme is built up. Use is also made of film strips and films. Store supervisors as well as assistants are trained.

National's staff go to any part of the country. They train more than 10,000 people a year. Regular calls are always made after training and installation to see if any problems have arisen.

The self-service store training is based on the same principles, suitably adapted. A complete self-service shop is laid out at National's London showrooms.

For training accounting machine operators there is a 10-day course at the London headquarters and at some provincial branches. In London the normal number under training is 22 per week. Most

trainees use their own firm's stationery on the type of machine that has been bought. They return to their firms accompanied by a demonstrator, who stays as long as required, and returns periodically to check both installation and operators. Replacement operators are also trained without charge.

At *Burroughs Adding Machine, Ltd.*, there are two main training divisions. The first covers private students, who pay to be trained as calculator or book-keeping machine operators. The former course takes three months; the latter four to six weeks. Successful students have no trouble in obtaining good jobs with Burroughs' customers.

The second training division deals, free of charge, with opera-

tors from Burroughs' customers. Training facilities are always available, so that, should operators leave, replacements can be sent for training. In some cases fully-trained operators can be provided if the customer has no staff suitable for training. The course for calculator operators usually lasts three weeks; that for book-keeping machine operators two weeks. Like other manufacturers, Burroughs endeavour to see that the trainee uses her own company's stationery on the machine she will eventually use.

Besides their London school, the provincial branches of Burroughs have their own schools. At present there are 13; eventually there will be 20, excluding London.

A permanent staff oversee the installation of machines and ensure that the operator is competent. The time spent on this work varies—sometimes it is only a matter of two or three days; in other cases it might last two weeks. Periodic visits are also made by the salesman to check whether the machines are operating satisfactorily.

Underwood Elliott Fisher, Ltd., also use both their London and provincial offices for thoroughly training users of any Underwood Elliott Fisher or Sundstrand product.

Free instruction is given by the school staff, or, in the case of the smaller provincial offices, by instructresses, who are available to go to any part of the country. All training is carried out under the guidance of the sales representative concerned. The length of the course varies from a few hours to



a week according to the type of machine.

When equipment is installed the sales representative is present, together with one or more installation instructresses. The representative continues to call on the client—daily if necessary—until everything is running smoothly. After this, he makes periodic calls for the same purpose.

Felt and Tarrant, Ltd., manufacturers of Comptometer calculating machines, have been pioneers of training schools. Today they have 20—one in London, the rest in the provinces—and these turn out about 3,000 operators a year. There may be anything up to 700 operators under training at any time. There is a fixed course, lasting on average three months, though a bright pupil may take it in eight weeks.

Trainees are divided into two groups—the first are customers' staffs; the second those who wish

to make Comptometer operating a career. In the former case training is free. In the second case the schools operate as commercial colleges. Students pay a fee and, on passing out, are found work by the employment agency operated by Felt and Tarrant themselves.

A trained operator can use this agency at any time to change to a new job. Felt and Tarrant make a particular point of keeping track of operators, and also produce a magazine, which is sent to every girl on their mailing list. The aim of the magazine is to interest and encourage operators for the benefit of themselves and their employers.

Customers' own operators are generally trained for the particular job that they will be required to do. The students, on the other hand, are put through a course covering most commercial requirements. If, however, either type of operator meets a problem that has not been covered in training, she can always contact her local school for help.

Sumlock, Ltd., have 21 schools in London and the provinces. In addition, they open temporary schools in a particular place for a limited time—as recently in a hotel in Norwich.

Training is free, both for customers' staffs (course of not less than one month) and private students (three months). Customers' staffs are trained for the particular job they will do; private students take the full course for Sumlock calculators, and have to pass two examinations to win a certificate. They can then take a higher course and sit for the Sum-



This National instructress is using a Synchronophone to instruct operators in the Class 3000 machine.

lock diploma. Sumlock assists them in obtaining jobs.

Refresher courses are also available. Demonstrators frequently visit customers to see that the operator is "at home" with her machine.

Very little instruction is necessary for the same Company's Plus adding machine—usually a day is adequate. Operators can, if they wish, attend a school for this instruction.

With **Bulmer's (Calculators), Ltd.**, who also train operators of their machines free, either in their showrooms or on customers' premises, an additional point of service covers secondhand machines. Here, too, free operator training will be provided.

Sales representatives visit cus-

Far Left, Comptometer operators in the making. Part of Felt and Tarrant's London School.

Lower left, inside National's accounting machine training school where operators attend a ten-day course.

Below, the comfortable lounge at the London training centre run by Sumlock, Ltd.

Below right, a section of one of Sumlock's training schools.



tomers from time to time to see that machines are being used to their fullest advantage. In the case of the Bulmer duplicator the representative calls once a month to service the machine provided the customer continues to use Bulmer's stencils and ink.

Similar high standards of service and operator training are carried out by many other firms, among whom mention must be made of the *Monroe Calculating Machine Co.*, and *Block and Anderson, Ltd.* The latter emphasize the valid point that where a machine is simple to work, it is more the application than the operation of the machine that has to be covered in training.

Arrangement of Courses

So much for the general principles of service and training worked out over the years by office appliance firms. How, the interested user may now ask is a training course actually arranged?

Addressograph-Multigraph, Ltd., provide an interesting example at their London school. Training on their Multilith duplicating machines covers two weeks and is split up as follows:—

First day—lecture on the history and application of lithography and an explanation of direct image plates.

Second day—the machines explained.

Third day—lecture on treatment and operation of plates.

Fourth day—pupils put into practice on the machines all they

have learnt in the previous lectures.

Fifth day (half a day)—question and answer session on the previous four days' work.

Sixth day—how photographic plates are made and how to order plates.

Seventh to tenth days—practical work on the machines, including one example in colour.

Trainees should now be able to handle black and white work without difficulty. Each receives a booklet on the operation of the machines.

Additional training is provided for operators who will carry out four-colour work or who will be using machines on complicated jobs. Addressograph-Multigraph also run an employment agency.

For Addressograph addressing machines a different method of

training is provided. There is no school, as each system is different and no standardized form of instruction can be adopted. Here it is the responsibility of the salesman who obtains an order to see that training is correctly and adequately given.

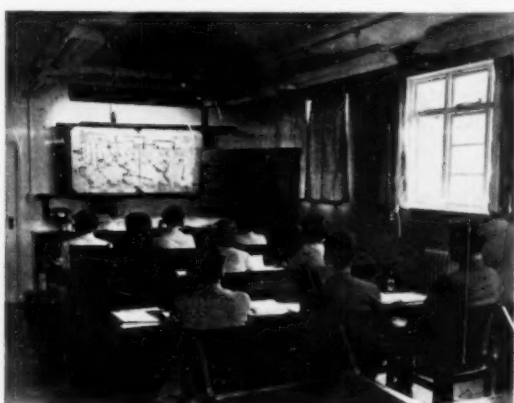
There is also on the A.-M. staff one member who is responsible for customer liaison. He is an expert on addressing equipment and can be called on by any customer or A.-M. salesman.

Gestetner, Ltd.'s duplicator training course, of one to two weeks, not only includes actual operation of the machine, but also how to prepare a stencil, which is of great importance. Film strips are used at their London school, and these, with commentaries, can be had on loan without charge to users.

Right, examining the model 1250 at the Addressograph-Multigraph school.

Below left, one of the lounges at Moor Hall, Cookham.

Below right, class in session at Moor Hall, Cookham.



MANAGEMENT AT WORK

Machines Not Craftsmen

FOR three centuries, stone from the quarries in the Southowram district of Halifax had been trimmed by hand by skilled craftsmen. But the number of skilled men available has dwindled, and one firm, S. Marshall and Sons, decided to experiment with mechanization.

No machines existed for trimming stone of the Southowram type, so the company in 1946 bought two old engineering-type planing machines.

Within a few months it was shown that machines of this type could be used for stone trimming, if running speeds were modified and tungsten carbide tools used. The dust problem was overcome by altering a standard set of dust extraction fans and pipes, and the new machine department was put into full production without any stone dust in the atmosphere. The dust now travels through the pipes to a distant discharge point; larger pieces of stone become lodged in the pipe and are salvaged at intervals for crushing and manufacture into composite stone slabs.

Nine standard planing machines are now in use. They are worked by employees who need have no particular knowledge of stone treatment, whose output is nevertheless greater than that of a skilled stone trimmer. So another labour shortage problem has been solved.

Paper Adopts Incentives

IN April, 1949, BUSINESS described an incentive scheme introduced by the Cambridge University Press—one of the first to be introduced in a printing works. Since then, incentives have made rapid progress in the printing industry, and many firms—including His Majesty's Stationery Office—are now paying workers by results.

The first newspaper to launch an incentive scheme based on time and motion study has just reported

the initial results obtained. The consultants responsible for the Cambridge scheme were called in by Mr. Malcolm Graham, chairman and managing director of the company publishing the *Wolverhampton Express and Star*, last June. By September the scheme was applied to the linotype staff and by October to the stonehands; other schemes for casehands and readers are now being worked out.

In the linotype department, output had increased by the beginning of November to 24 per cent. above the June level, though working hours had been reduced by 11 per cent. Output per man-hour was up by 40 per cent., and earnings had increased by an average of 40s. per week, with the fastest setter earning a bonus of 90s. a week.

Improving Productivity

SECTIONALIZATION is the bugbear of any firm making a number of different products. Joseph Lucas, Ltd., of Birmingham, are trying to overcome it by means of management teams, who meet and work together with the specific idea of improving productivity in the firm.

Each team consists of the production engineer for the particular product, who acts as team leader, the designer, the methods engineer, the quality superintendent, and, co-ordinating the activities of the team as a whole, the product engineer. The first four members of the team are also members of departmental functions for which they continue to be responsible to their departmental managers. The fifth, the product engineer, is without departmental responsibility or control.

He is the brains of the team, preparing the objective programme, and correlating performance with it. He is a specialist on his own product, but no other sort of specialist; in fact, one of his jobs is to see that the specialists in the firm—time and motion study engineers, cost accountants, and so on—give the fullest possible help.

For new products, design-for-production teams are set up on similar lines, with the design engineer for the product replacing the production engineer as team leader. The design draughtsman replaces the production manager and the quality superintendent. These two can influence the design of the product at a later stage as members of the management team.

Training for Management

TRAINING for management is a subject that has recently been very much to the fore. One firm that has little to learn on the subject is Associated Electrical Industries, Ltd., some of whose schemes of training are 50 years old.

"We have always tried to maintain a forward-looking attitude of mind to them, and to adapt and modify them and to introduce entirely new methods when the old ones no longer serve their purpose," said Sir Arthur P. M. Fleming, the company's Director of Research and Education, recently.

"Our method of discerning inherent capacity for a particular craft is to put all probationary trade apprentices into a works training school for one year. Dur-



Sir Arthur P. M. Fleming.

ing this period, the youth is tried out under skilled observation in a variety of trades before he is assigned to the wider training experience of the workshops, where throughout his apprenticeship he is under observation. For university graduates, the period of apprenticeship is two years, during which

a young man will get sufficient experience to determine whether he is best suited for technical design, research, works production or home or overseas selling. Generous day release is given to all grades of personnel."

The company's school, now run in conjunction with the county education authority, is recognized as being suitable for one of the county colleges which will ultimately be set up under the Education Act of 1944. The Apprentice Association embracing all grades of apprentices, is responsible for a wide range of social, recreational and educational activity.

Sir Arthur was giving the last of the centenary lectures, "The Worker in Industry," arranged by the Ministry of Labour and National Service.

Making the Most of It

TO EMPHASIZE the need for a greater effort in conserving raw materials, Leyland Motors, Ltd., has staged an "Economic Use of Materials" exhibition for its workers. The lunch hour was extended to give every man a chance of seeing it.

"By demonstrating the various practices already in use in the factories to save steel, aluminium, wood and hide," said Mr. A. J. Charnock, general sales manager, who initiated the exhibition, "the company hopes to make every employee more conscious of the material supply position and so induce them to make further suggestions."

The company has taken its own medicine in designing the ex-

hibition. Stands have standardized fittings that can be used again, and even the display boards are uncut hardboard sheets that will be returned for further use by the maintenance staff.

Plea for Training

IN the United States there are 600 educational institutions which award degrees to students specializing in business and commerce. In Britain, there are only 60. There are 370,000 students of business administration in the graduation stage in the U.S.A., but only 4,000 in this country. These statistics were quoted by Sir Harold West, managing director of Newton, Chambers and Co., Ltd., of Sheffield, in support of a plea for better educational and training facilities for prospective managers made to a recent meeting of a group of the Institute of Industrial Administration, of which he is chairman.

Finding a Better Way

LIKE many another firm, Wilsons and Mathiesons, Ltd., of Leeds, a member of the Radiation group, booked orders for their products (they make gas fires, ranges and boilers), and passed them through to the shops as they were received. The shop manager did the best he could to meet them with the plant available at the time.

Then management said, "There must be a better way," and introduced a scheme of planned production. As a first step, the sales department was asked to provide an approximate estimate of requirements for one year ahead.

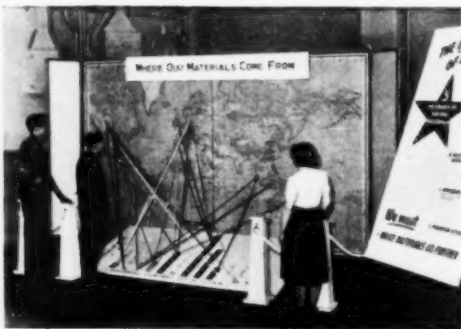
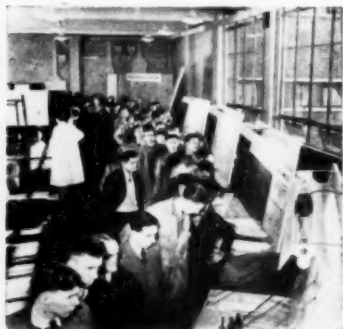
More detailed estimates of requirements are then made each quarter, so that machine loading can be planned well in advance. A wall board provides up-to-the-minute information as to the current and future position of the whole factory.

This has meant that similar orders can be combined to give long runs. Labour turnover has been reduced, and the planning section is assured of a definite labour potential on which to base their long-term production plans. Overtime requirements are known in advance, and workers can be informed accordingly. And the total effect of the new scheme has been to improve productivity by 130 per cent.

Success of the planning section in this department has led to the setting up of similar sections in other departments.

Out of Sight, But . . .

A MAGNETIC wire recording machine helped the management of Business Publications, Ltd., publishers of *BUSINESS*, to solve a not unusual problem at their annual staff Christmas party. For many years the governing director had addressed a few words to the staff at this function. This year he was unwell and unable to be present. The wire recorder enabled him to deliver his message as usual, and the personal touch between management and staff was maintained. He recorded his speech in his home on a *Sonofil* machine, which was taken to the hall where the party was being held and played back through the amplification system during the evening.



Two photographs of Leyland's Economic Use of Materials Exhibition (see "Making the Most of It").

He Sells the World on Line Produced Fashions



Leslie Berker looked at the dress trade with the eye of an engineer—and found it wanting. By applying the management techniques he had learnt in engineering, he brought efficient large-scale production to an industry that sorely needed it.



THE British clothing industry was for long under a cloud, epitomized by Hood's "Song of the Shirt." But the sweatshops were wiped out by the minimum wage legislation at the turn of the century; they were rapidly replaced, in the men's clothing industry, by the huge mass production units associated with the names of Sir Henry Price and Sir Montague Burton; units that turned out cheap suits, but, nevertheless, maintained good standards of quality, wages and working conditions.

No similar development occurred in the women's side of the industry. Even as late as 1935, the women's light clothing industry still consisted exclusively of small firms, which, in the words of Leslie Berker, were run on "what is, perhaps, best described as the 'Patriarchal Production System,' whose outlook, market and range were uniformly minute, and whose method was subject to seasonal variations and inclined to muddle, and was more closely related to the little woman round the corner than to twentieth century production techniques."

Leslie Berker should know. Entering the business at 33, without previous training in, or experience of, garment production, he built up one of these small businesses in 15 short years into a group of companies employing

over 1,600 workers. Today Berkertex products command a ready market, not only at home, but in such fastidious markets as Paris and New York. And the secret of his success has been the application of line production techniques learned during his early training and experience in the field of engineering.

Leslie Berker was born in Birmingham. He went to the King Edward School and later to the Birmingham Technical College. His father was in the cutlery business, and all his friends were

siderable amount of selling, at which he was particularly successful, and finally became a junior director in a firm manufacturing advertising display materials and novelties.

This work brought him into contact with advertising directors of some of the largest firms in the country. He was responsible for interpreting their ideas at a price they were willing to pay, and many of his own schemes that proved more economical and practical were given preference over those devised by their own experts. This experience subsequently became one of his most valuable assets in promoting the sales of Berkertex.

At this time women's dresses were being imported from U.S.A. in increasing numbers, and Leslie Berker met an American dress producer in London, who had come over with the intention of manufacturing women's garments in this country on the American system. This chance meeting was to change Berker's whole future, because the American suggested that Leslie Berker should join him in this new enterprise, taking over the responsibility of the selling and promotional side of the business. This proposal appealed to Berker because British textile mills were going through a bad time; thousands of textile workers were unemployed, despite the fact

By PHILIP F. DYER

training as engineers. So it was almost inevitable that Leslie, too, became an engineer. After leaving college he went to work for an uncle who owned an electroplating concern. Some years later he left to act as British executive of an American merchandizing firm. He did well—better, indeed, than the firm, which expired in the depression of the middle 1920's. Leslie Berker went back to engineering, but he was not content with the poor rewards that were then available in the industry, so he tried a number of jobs, all of which added something to his knowledge of modern production methods. During these years he also did a con-



Window display featuring Berker-tex children's coats at Altman's store on 5th Avenue, New York.

that, through generations, they had acquired the skill and knowledge of making textiles that were universally recognized as the best in the world. Berker foresaw that a huge potential market awaited the garment manufacturer that was sufficiently well organized to use the fine British textiles available to their fullest advantage.

He saw that efficient production methods applied to women's garment manufacturing could produce a standard of quality at prices far below those then prevailing, thereby reaching a much wider public. So Leslie Berker agreed to put up a little capital, and proceeded to devote a few hours each day to his new venture, carrying on, in the meantime, with his advertising display work.

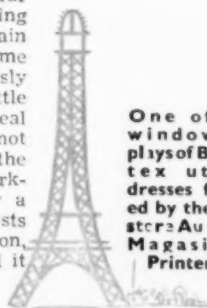
Nursing the Baby

It soon became apparent that, if he were to get any return from his capital, he would have to devote considerably more time to nursing it. He saw that, although the American's methods were an improvement on the established practices of the women's garment industry in this country, they fell far short of modern manufacturing principles, inasmuch as the main innovation was to use some machines that were not previously employed here. If he knew little about dresses, he knew a good deal about machinery, and he did not need a stop-watch to see that the expensive machinery in the workshops was being used to only a fraction of its capacity. Machinists were, in traditional fashion, handed a bundle of pieces and it

was left to their discretion in just what order they should sew them together. The result was that the machinist spent more time on deciding how to do the job than on actually doing it. And, of course, while she was thinking, her machine was idle. This meant wasted time and higher costs of production.

Gradually Leslie Berker moved in on a full-time basis. He learnt all he could about fabrics, about styling, about the technicalities of cutting and sewing. At the same time he started applying his experience and knowledge of line production techniques. He split up jobs and simplified them, enabling skilled workers to concentrate on work that called for their skill, while less skilled workers did the ancillary jobs. He broke down lengthy cycles into simple elements. He applied simple time and motion study techniques—for the first time in the industry.

The new methods paid rapid dividends. He opened his first factory on the first floor of a building



One of the window displays of Berker-tex utility dresses featured by the Paris store: Au Grand Magasin du Printemps.

in London in September, 1936. By the following June he had taken over the second floor of the building, and by the end of 1937 nearly the whole of the third floor. In 1938 he had to open a new factory. This expansion, together with the reorganization of methods that was under way, brought him labour problems. The workers he could get were experienced in traditional methods, but could not come up to his new standards. So he brought in consulting engineers to tackle the problem. They applied scientific aptitude tests—and found that 60 to 70 per cent. of applicants for jobs were not and never could be, fit for the work, although many of them had been employed in the trade for years. The reason for this was that these workers had entered the trade solely because a relative or close friend was in it, and the only training they had received was from observing and following the methods of other workers who were considered proficient. In this way they acquired the bad points as well as the good ones of their tutors, and so the vicious circle continued. Those that passed the tests were unskilled in the new methods and had to be trained. So Leslie Berker's experts worked out a basic training programme based on a detailed training manual.

Munich came, but Leslie Berker was an optimist. In the summer of 1939 he took a long lease of premises off Bond Street, and in August went on the maiden flight of the "Yankee Clipper" to investigate the possibility of exporting to the U.S.A., which was a reversal of what was then happening. He had booked his return passage on the "Queen Mary," but owing to the outbreak of war the "Queen Mary" did not return. It took him several weeks to get back to



England. In the meantime, as the result of frantic cables and telephone calls, his executives had started dispersing production all over England, in small units of 40 to 50 workers. It was an inefficient and costly process, but a sound insurance policy. It was only possible because, by dint of his training programme, he could rapidly train local labour to do a good quality job. And even in the most difficult years Leslie Berker insisted on maintaining quality standards—a policy which, he claims, has paid handsome dividends ever since and made the name, "Berkertex," famous throughout the world as a guarantee of quality.

Utility with Quality

In 1942 came the Utility Clothing Scheme, which was greeted with howls of derision from the bulk of the trade and of consumers. But whatever might be said of the way in which the scheme was launched and run (and Leslie Berker could tell a tale or two), there was something in the basic idea which was not so far from the already proven production technique of the Berkertex organization. Leslie Berker produced Utility goods of such high quality that they found a ready market, not only at home (where women could get little else), but also abroad, where they were competing in a free market.

Finally, with the end of the war, came Leslie Berker's chance to set up the factory of his dreams, where he could at last realize the full fruits of his specialized production methods. For various reasons he made the decision to get right away from the established centres of clothing production. In 1941 he had acquired what was left of Lancaster and Co. (Est. 1900), Ltd., after it had been bombed. This concern was started, nearly a hundred years ago, by a naval tailor in Plymouth, who made, in addition to mercantile and naval uniforms, small pilot jackets for the children of skippers and officers who frequented that port. Over the years the range of children's garments produced widened, and by 1941, though still comparatively small, it had achieved a reputation for high quality children's wear.

The claims of Lancaster took Leslie Berker to Plymouth. After



Seven Signposts to Success

1. **Do the operative's thinking for her.**
2. **Let the skilled operative concentrate on skilled work.**
3. **Select your workers scientifically—and train them by standard methods to do a standard job.**
4. **Link output with payment, based on time study—but get the methods right first.**
5. **Help the retailer to sell your goods—and make things easy for the salesman.**
6. **Find alternative markets—overseas if necessary—to even out seasonal fluctuation.**
7. **Give young talent a chance at the top.**

long negotiations and in the face of great competition from other firms, as well as Government and civic departments, the Ministry of Works made available to Berkertex the new Technical Training Centre the Government had built there. He won this decision because he could absorb more of the Plymouth unemployed than any of the other applicants. In the three years since he moved there in October, 1948, he has turned it into the largest light clothing factory in the world.

It has cost over £500,000, and employs more than 1,200 workers at present. Berker plans to increase it so that, when it is finally completed, it will house about 3,000.

Effective Training

Again, Leslie Berker found himself with a labour problem, and once more his preparatory work stood him in good stead. Over 12 years he had built up a staff of technicians in his London factories who knew his methods and could train others in them. With the aid of the training manual, the "green" labour of Plymouth was trained so effectively that eventually all the technicians, save twelve, returned to London.

In the first two years the train-

ing scheme cost Berker £100,000—but it laid the basis of a new industry that contributed substantially to the rapid post-war recovery of sadly-blitzed Plymouth, and enabled Berker to meet the ever-increasing demand for his products.

Post-war expansion also meant more room at the top, and in recruiting executives Leslie Berker has gone for youth and new ideas, rather than experience. Eric Crabtree, his managing director, for instance, is a 37-year-old solicitor, who ended his war career as Chief of Staff to the Military College of Science. He had no previous experience of clothing manufacture before joining Berker. Neither had Leonard Berney, the production director, who, at 22, was perhaps the youngest major in the British army. Both Gertrude Macklin and Reginald West, the company's technical director and secretary, have spent a major portion of their working lives inside the Berkertex family. But Berker has not wholly ignored the claims of experience. The Ballantines, father and son, for instance, have jointly served over 60 years with the old Lancaster company and with Berkertex. This service has been unbroken, except in the case of Freddie (Junr.), who served in the 1939-45 war.

Leslie Berker's dream of a modern clothing factory, turning out thousands of garments cheaply and efficiently, with operatives well paid and working in excellent conditions, was achieved. But it could never have been thought of without the mass market that is the necessary counterpart of mass production. And the mass market would never have arisen had not Leslie Berker had as many ideas about selling as about production.

The first thing that Leslie Berker did, back in the thirties, when he entered the industry, was to plant his own name firmly on it. The firm became Berkertex, Ltd., and every garment was labelled with the brand name. It was a condition of sale that the label should not be removed.

Some retailers did not like it at first—and customers were apathetic. But Leslie Berker began to advertise direct to the ultimate customer—another innovation for a clothing manufacturer. Slowly, but surely, brand preference began

to build up. Customers started looking for the label. Today there are dozens of firms in the trade pushing their own brand names, a sure sign that imitation is the sincerest form of flattery.

Berker's second major stroke was the tie-up with Hartnell. When the Utility clothing scheme was launched Berker realized that Utility need not mean uniform drabness, but the woman in the street did not, and she needed convincing. So Berker signed up Norman Hartnell to design his Utility dresses. Hartnell, long designer to Her Majesty the Queen and subsequently to the Royal Family, was a name to conjure with. Berker could, of course, have turned out perfectly adequate Utility garments without Hartnell, but his advent brought the styling, chic and reputation inseparable from the world of *haute couture* that put over Utility in general, and Berkertex Utility in particular, to a somewhat doubtful public. Berker immediately organized a display of the new Utility dresses, and Norman Hartnell, for the first time in his career, personally presented them.

Helping the Retailer

Retailers, too, soon recognized the advantages of dealing with a firm that was anxious to go out of its way to help them to sell. The bugbear of the trade was, of course, "bad stock"—garments that could not be sold because they had gone out of the ephemeral fashion. Berker's designers tackled this by producing models which, while obviously being the product of one season, would find a market in another. He tackled the problem of sizes, too, adapting American type sizing to the needs of the home market; the company now boasts of a range of 22 sizes, including the shorter half-sizes and the taller woman's sizes; eight more are soon to be added, making 30 in all.

A recent development in the distributional set-up has been the creation of "shops within shops" in well-known stores. Four are already open in Plymouth (of course), Southampton, Norwich and Ipswich. Others are in contemplation.

Nor has Leslie Berker stopped at home. He had been worried by the seasonal nature of the clothing industry. Other firms solved the



Half of the dress machining bay—the largest in the world—at the Plymouth factory.



problem by laying off workers in the slack seasons and taking them back when trade looked up again. He resolved not to countenance it—and in 15 years no Berkertex worker has been laid off for a single day. Instead, Berker sought new markets to interleave with the old. He could not hope to sell winter garments in Britain in May—but he could in South Africa and Australia, where May represents the onset of autumn. Thus exports have meant to Berker not merely an additional source of profit; they have enabled him to maintain a stable labour force on a planned production basis all round the year, with a corresponding reduction in costs and a maintenance of high quality standards, and trained personnel.

Berkertex garments are now being exported all over the world. His peak achievement is that of selling British Utility garments in Paris. Last September Berkertex offered, through Au Grand Magasin du Printemps, several thousand Berkertex garments in their full-size range. Within a month the Printemps organization was buying further supplies, and Berkertex departments were established in Printemps' stores in Lyons, Bordeaux, Versailles, Lille and Nancy.

This piece of commercial impertinence was the outcome of shrewd analysis and sound planning. For years the great fashion houses of Paris have led the world, but they have never produced clothes for the middle-class French woman.

On a larger scale was Berker's invasion of the American market—this time in children's goods. Lancaster's had for years done a desultory trade with the U.S.A. through a few leading American department stores, but in 1949

Berker decided the time had come for a full-scale onslaught. He went over to New York and set up a permanent sales organization in the Empire State Building. He and his salesmen took round the range of goods to department stores throughout the U.S.A. One or two ran special shows. Others followed. So successful was the initial launching that today Berkertex have nearly 400 running accounts in the U.S.A., and are still expanding rapidly.

Berker has decided views on selling to America. It is a difficult market, he says, but the potential rewards are enormous. The only secret is to have something that the customer wants that your rival hasn't got. In Berker's case, it is quality. "Look at this," he will say, pointing to the row upon row of fine stitching in strictly parallel lines on the collar of a boy's coat. "If an American manufacturer asked his workers to do this, they would throw it back at him. Ours can and will do it—so we get the sale."

Make it Easy

But quality alone is not enough; you have to make it easy for the store and the sales girl to sell your goods. When Altman's advertised Berkertex in the New York papers Berker reproduced the advertisements in a broadsheet and sent it to all his other potential customers. And whenever a store gives an order the delivery is always accompanied by a parcel of little brochures, in the form of a purse, written for the sales girls and outlining, briefly and simply, the selling points. And chief of these is the slogan, "Made in England." "It still means a lot," says Berker.

Eyes in Industry—1.

Four Fields Where it Pays to Watch Employees' Eyesight

By SAM BLACK, F.S.M.C., F.A.A.O., Editor, "Vision"

TWO of the vital problems facing top management today are how to avoid labour wastage and how to make the best of available manpower. The contribution which personnel welfare activities can make to solving these problems is generally recognized; most progressive managements are concerned with safeguarding the health and welfare of their employees.

Prominent among the special problems of personnel welfare is the eyesight of workers. The value of a worker is directly proportional to his visual efficiency; practically everything that a person does is dependent on the accuracy and efficiency of his eyes. Moreover, good or bad vision has a very important effect on health; much ill-health or general neurasthenia has its direct cause in bad eyesight.

Let us therefore consider in detail the vital part played by eyesight in the problems of modern management.

First, Productivity.—Even among young people at the age of 20, less than two-thirds of the population have normal vision. At any age, fewer than 10 per cent. of the population have perfect vision, and any of the others may find difficulty in doing their work properly if it is beyond their visual capabilities.

It is possible, however, to grade each type of work according to the keenness of vision necessary. For instance, miniature radio valve assembly, "linking" in the hosiery industry, and many processes in electrical and general engineering require extremely keen vision and the ability to converge and to work

at very short distances away from the eyes. Fine engraving is another job that requires better than average vision. And it is only common sense that a worker who sees well will be quicker and more accurate than one with defective eyesight.

Some years ago the Medical Research Council carried out investigations among workers engaged on particularly difficult tasks. Many of the employees were fitted with special "work-glasses" for doing particularly small and intricate work. These work-glasses are a great help even if, ordinarily, glasses are not required. After the workers had used them for a time output increased in some cases as much as 40 per cent. Even more important was the fact that this improvement was maintained. The use of work-glasses is now common in many industries and the prismatic effect of the lenses relieves the severe strain which would otherwise be caused by working at very short distances from the eyes.

Aiding Older Workers

Among young people, the problem is not such a serious one, because in youth and in young adult life the eyes have ample reserves of accommodation and can overcome considerable amounts of eyestrain, but with increasing age the problem becomes of considerable importance. From about 40 years of age onwards few people can do close work accurately for any length of time without the aid of spectacles. The average age of the population of this country is steadily increasing, and more old people are remaining

Once upon a time workers were dismissed when they needed spectacles. Today more humane principles prevail. Indeed, alert managements go further and take a positive interest in their employees' eyesight. Why it pays them to do this is here analysed by an expert. A subsequent article will describe how other firms can follow suit with Advantage.

at work in response to the urgent appeals of the Government for increased production in the vital industries, so the safeguarding of the eyesight of the older workers in industry deserves careful attention.

2. Quality of Output.—Quality of output is even more important than quantity. The proportion of rejects or spoilt work has a vital bearing on the success or otherwise of a factory department. In one large engineering works in the south of England the provision of work-glasses for the employees engaged in soldering platinum filaments on to small copper posts, reduced the percentage of rejects from 12½ to 2. This example could be matched by many others.

In the case of men and women who have been doing a particular job for many years, touch and other instincts play a large part, but however skilled and experienced a worker may be he still depends chiefly on his eyes for seeing what he is doing. In the case of workers new to a job this de-

pendence on vision is even greater. Other things being equal, a worker with good eyesight will produce better work than one with bad.

For inspectors, very good eyesight is essential, even if special devices are employed to make their task easier than it would be with the unaided eye. These special devices may be of a lighting or magnifying nature according to the type of product being manufactured.

3. Industrial Absenteeism.—Unsuspected eyestrain is undoubtedly one of the largest single causes of absenteeism. Eyestrain, particularly suffered over a long period, causes chronic headaches and a general feeling of ill-health which may easily lead to a real dislike for the job. It may, in serious cases, even cause a complete breakdown of health.

Here, management must be alert. Eyes may well be the root of the trouble when workers have frequent headaches and find little relief from aspirins and the other usual remedies.

Curse of Headaches

The worst aspect of eyestrain is that it persists after the close work has been finished; it accompanies the employee home after work is ended and interferes with the enjoyment of leisure. Headaches due to eyestrain are often still present when the sufferer wakes in the morning, and the resumption of work causes the pain to increase in severity—with detrimental effects not merely on current efficiency but on general health.

4. Recruiting and Job Allocation.—Different types of jobs require varying levels of visual ability. Allowance for this can be made by employing an expert to advise on the types of vision required for different processes. The visual standards required can be listed and taken into account when new entrants to industry receive their initial interview.

Where new employees receive a medical inspection, it is easy to include an eye examination. This will reveal that quite a high proportion have deficient eyesight, either because they need spectacles or because the spectacles they wear require bringing up to date. If a factory has its own arrangements for testing the eyes of employees there is little danger

of losing their services, as may happen if the would-be employees are simply told to go away and have their eyes tested before reporting for work. This point is a very real one and was one of the main factors which influenced the Ministry of Supply to inaugurate its visual welfare scheme in Royal Ordnance Factories in 1943.

Error May Cost Lives

In Royal Ordnance Factories the question of eyesight is not merely one of productivity but may easily affect the lives of many human beings. A fuse incorrectly set, a high explosive shell badly finished and similar mistakes can cost the lives of many of our own fighting men. Considerations of this nature may not apply to industry in general, but nonetheless every factory aims at maximum efficiency, whatever the product.

It might be thought that a person who wears spectacles achieves normal vision, but this is not always the case. Examinations of employees in Royal Ordnance Factories revealed recently that only approximately two-thirds of the persons wearing spectacles were able to secure normal vision; even at the age of 20 only about 70 per cent. secured normal vision. This point emphasizes the need to make every attempt to see that new employees are placed in jobs suitable to their visual ability, thus avoiding square pegs in round holes. If eyes are examined as part of the initial medical examination, all the necessary information can be obtained at that time.

Lighting is Important

Twenty-five years ago it was common for a worker to be dismissed as soon as he needed spectacles. As a result middle-aged workers struggled on with great difficulty without spectacles rather than risk losing their jobs; jobs were difficult to find pre-war. This prejudice is practically dead now and even the armed forces accept volunteers who wear spectacles.

In industry it is necessary not merely to permit the use of spectacles but to take a positive interest in seeing that all employees have any assistance that spectacles or other visual aids can afford them.

Good lighting is a prime factor

in facilitating easy and accurate vision and here great strides have been made in recent years. The influence of the Illuminating Engineering Society has been very beneficial, and latterly the Building Research Centre has carried out very useful research into the planning of factories. Papers read at the recent Building Research Congress in London showed what definite improvement in factory design has been achieved during the last two decades.

Motion study has led to improvements in the layout of machines and tools in many industries. This has resulted in much economy of effort, leading to increased productivity. In the same way, the proper design of machines and working conditions from the visual point of view has resulted in much easier seeing conditions. This tendency deserves to be encouraged, for anything that helps to simplify the visual task confronting the worker will aid industrial efficiency. Some industrial machines, owing to their structural features, impose difficult visual tasks on their operators and this aspect of machine design deserves more serious consideration than it receives at present.

Easing Clerical Work

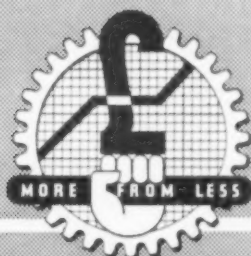
In clerical work careful design of the forms and other stationery used can facilitate the work and speed up operation while at the same time aiding accuracy. Apart from the size of figures and letters, the spacing of forms is an important factor in their legibility.

The most recent development in factory design has been the employment of colour on a large scale. Several articles in *BUSINESS* over the past year have described how various colour schemes promote safety and give a psychological uplift to morale.

The use of colour, good lighting, improved machine design, magnifying and lighting devices for special operations, "work-glasses" for special tasks, spectacles for all employees that need them—these are some of the ways in which attention to the visual aspects of industry pays good dividends both to management and workers.

*Please turn to Page 144 for
Health, Welfare and Safety
Equipment.*

Preview for Busy Executives "BUSINESS" GUIDE



TO THE BUSINESS EFFICIENCY EXHIBITION

BINGLEY HALL, BIRMINGHAM

FEBRUARY 19th to 29th 1952

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"BUSES :

From New Street, 3A, 6, 7, 9, 12. From Snow Hill, 5A.

MUNICIPAL CAR PARK :

Corner of Broad Street and Suffolk Street.

**70 Page
Business
Guide**

TWO IMPORTANT EXCLUSIVE



Still Room for More Mechanization



Says Sir Walter Monckton, K.C.M.G., K.C.V.O., K.C., M.C., M.P.

Minister of Labour and National Service

AS IN INDUSTRY, so in business, full efficiency can only be got by the use of modern and labour-saving appliances.

Until a few years ago, many firms in this country still clung to antiquated systems and apparatus, while such countries as the U.S.A. and Germany availed themselves of the advantages of every time- and labour-saving machine invented. But latterly we have made rapid advances. Our research workers have introduced new equipment of their own invention to swell the flow of office machines made in British factories by British workmen. Mechanical calculators and tabulators, sorting and filing appliances, internal communication equip-

ment—these are just a few of the things we are now making for ourselves, and are actually exporting to the U.S.A., Germany and other countries.

WIDESPREAD MECHANIZATION of offices has been the result. But there is still room for more mechanization, especially in smaller offices. This would not only contribute to greater general efficiency, but help to ease the shortage of manpower, which is a matter of much concern to everybody. The greater the saving of clerical labour in trade, industry and commerce, the more manpower will remain for other work. I welcome, therefore, the initiative shown by BUSINESS in giving prominence to the exhibition.



SEE "BUSINESS" AT BIRMINGHAM

Through the courtesy of the Office Appliance and Business Equipment Trades Association, BUSINESS will once again have its own stand at the Business Efficiency Exhibition. A cordial invitation to all visitors is extended to call at the stand for information. Special staffing arrangements have been made to assist enquirers. BUSINESS and other journals and books of value to businessmen published by our associate companies will be on view at

STAND No. 85

MESSAGES TO "BUSINESS"



Here are the Tools of Efficient Administration

Says B. B. Dyer, M.A.

President, Office Appliance and Business Equipment Trades Association (O.A.B.E.T.A.)



THE major exhibition under the organization of the Office Appliance and Business Equipment Trades Association (O.A.B.E.T.A.) during 1952 is being staged at Bingley Hall, Birmingham, and is our first visit there since before the war. It is, indeed, right that the industry which this Association represents should exhibit its progress in Birmingham, which, according to available statistics, is now scheduled as the second city in the United Kingdom.

Our industry performs its work in such a way that, to the ordinary public, it does not lend itself to quick identification—or dare I say, glamour—but, nevertheless, it makes a fundamental contribution to our modern economy.

Our projects are so often taken for granted as necessary adjuncts to ordinary business procedure that their essentiality in modern commercial life is overlooked. But great strides have been made during the past 20 or 30 years, and those of us who do not like to be considered old, or ageing, must shudder when we look back on office methods which existed in our youth.

We can remember rows of clerks poring over neatly-written ledgers, adding up interminably long rows

of figures, checking and rechecking. And there was the evening rush on the letterpress copying machine; filing of statements, invoices and receipts was often accomplished by use of skewers placed at convenient intervals on the walls. And so on. All has changed in less than a lifetime, and how commonplace have typewriters, adding and calculating machines, duplicators, filing cabinets and systems, and all the other machines and appliances become in a short space of time!

Increased Efficiency

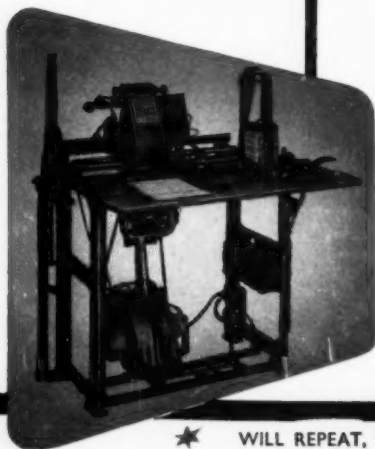
Of course, progress in science and things mechanical has been widespread during this century, but we in this industry can claim to have made a very special contribution to the raising of the standard of administrative efficiency. Our contribution has been twofold. Firstly, by mechanizing office operations which were previously laboriously undertaken by the sweat of the brow, human brain power and initiative have been released for more creative purposes. Secondly, the speed and accuracy of machines have made it possible for the huge increase in office work which has occurred during recent years to be

undertaken with more efficiency by less staff. Hence our exhibition motto, "More from Less."

The growth of our industry, especially during the years since the war, has been remarkable, and early last year tribute to our development was paid by the Minister of Supply, who stated that the expansion of the industry had been more rapid and successful than that of any other. The opening up of factories in this country by American manufacturers of office machines means that practically all the products marketed by our members are made by British labour. The export performance of the industry, also, is of a substantial character, and the figures for 1951 are likely to amount to over £10,000,000.

Like most other industries, development in design and expansion in output is restricted by short supply of essential raw materials, and this is especially so in the case of steel office equipment. It is hoped that the powers who determine the distribution of scarce materials will continue to appreciate the great part which this industry plays in the economy of the country, for efficient administration is impossible without efficient "tools." And this industry is the provider of those tools.

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WILL REPEAT, SKIP, DUPLICATE OR TRIPLICATE ANY DESIRED ADDRESS AT WILL!



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EXHIBITORS

Complete Alphabetical List

Stand No.		Stand No.	
	ABBOTT BROS (SOUTHALL), Abbess Works, Southall, Middlesex. SOU 1357		DICTOGRAPH TELEPHONES LTD., Abbey House, Victoria Street, S.W.1. ABB 5572.
	ADDRESSALL MACHINE COMPANY, 11-13, Southampton Row, W.C.1. HOL 3571-2		EGRY LTD., Aldwych House, Aldwych, W.C.2. HOL 2801.
	ADDRESSOGRAPH-MULTIGRAPH LTD., 20, Kingsway, W.C.2. TEM 8474.		E.M.I. SALES & SERVICE LTD. (EMIDICTA DIVISION), Hayes, Middlesex. SOU 2468.
	ADREMA LTD., 27, Telford Way, East Acton, W.3. SHE 2091.		ELLAMS DUPLICATOR CO. LTD., 5, Dean Street, W.1. GER 4556.
	ANSON, GEORGE, & CO. LTD., 5, Cophall Buildings, Cophall Avenue, E.C.2. MON 4321.		EVERTAUT LTD., Walsall Road, Perry Barr, Birmingham, 22B. Birchfields 4587.
	ART METAL CONSTRUCTION CO., 199-203, Buckingham Palace Road, S.W.1. SLO 5201-6.		EXPANDEX VISIBLE FILING CO. LTD., 94, Baker Street, W.1. WEL 3966.
	ASTON CABINET CO. LTD., "Astrola" Works, Roebuck Lane, West Bromwich. West. Bromwich 0717		FANFOLD LTD., North Circular Road, N.W.2. GLA 5477.
	BELL BARN LTD., 116, Oldbury Road, Smethwick, 40. Smethwick 0711.		FELT & TARRANT LTD., Aldwych House, Aldwych, W.C.2. HOL 4374.
	BLOCK & ANDERSON LTD., 58-60, Kensington Church Street, W.8. WES 2531.		FORD, FRANK R., LTD., Sydenham Road, Birmingham, 11. VIC 1924.
	BRITISH OLIVETTI LTD., 10, Berkeley Square, W.1. GRO 6161.		GESTETNER LTD., Aldwych House, Aldwych, W.C.2. HOL 8700.
	BRITISH TABULATING MACHINE CO. LTD., 17, Park Lane, W.1. REG 8155		GLEDHILL, G. H., & SONS LTD. and THE GLEDHILL-BROOK TIME RECORDERS LTD., Trinity Works, Halifax. Halifax 3721.
	BRITISH TYPEWRITERS LTD., Queen Street, West Bromwich. West Bromwich 0781.		HADLEY SOUND EQUIPMENTS LTD., 72, Cape Hill, Smethwick, 41. Smethwick 0977.
	BULMER'S (CALCULATORS) LTD., 7-8, Poultry, E.C.2. CEN 3611.		HALSBY & CO. LTD., 52-53, Dean Street, W.1. GER 4163.
	BURROUGHS ADDING MACHINE LTD., Avon House, 356-366, Oxford Street, W.1. REG 7061.		HAYWARD COMPANY (ADDRESSING MACHINES) LTD., 62 Britton Street, Clerkenwell Road, E.C.1. CLE 5961.
	BUSINESS PUBLICATIONS LTD., 180, Fleet Street, E.C.4. CEN 8844		I.B.M. UNITED KINGDOM LTD., Beaver Lane, Hammersmith, W.6. MAY 2004.
	CARTER-DAVIS LTD., Queen Elizabeth Street, S.E.1. HOP 0204.		INTERNATIONAL COIN COUNTING MACHINE CO. LTD., Alexandra Road, Enfield, Middlesex. Howard 1886.
	CARTER-PARRATT LTD., Idlesleigh House, Caxton Street, S.W.1. ABB 3675.		JONES, PERCY, (TWINLOCK) LTD., 37, Chancery Lane, W.C.2. CHA 8971.
	CAVE, C. W., & CO. LTD., 59, Holborn Viaduct, E.C.1. CEN 3778.		KALAMAZOO LTD., Northfield, Birmingham, 31. Priory 1101.
	CHUBB & SON'S LOCK & SAFE CO. LTD., 40-42, Oxford Street, W.1. MUS 5822.		KAYE'S ROTAPRINT AGENCY LTD., Rotaprint House, Honeyput Lane, N.W.9. COL 8822.
	COLUMBIA RIBBON & CARBON MFG. CO. LTD., Kangley Bridge Road, Lower Sydenham, S.E.26. Sydenham 5193.		LAMSON PARAGON SUPPLY CO. LTD., Paragon Works, E.16. ALB 3232.
	COMMUNICATION SYSTEMS LTD., Strowger Works, Liverpool, 7. Stoneycroft 4830.		LAWES RABJOHNS LTD., Abbey House, Victoria Street, S.W.1. ABB 1542.
	CONSTRUCTORS LTD., Tyburn Road, Erdington, Birmingham, 24. Erdington 1616.		LONDON OFFICE MACHINES LTD., 128-131, Terminal House, Grosvenor Gardens, S.W.1. SLO 1061.
	COPYCAT ASSOCIATED (MARKET- ING) LTD., Carlisle House, 8, Southampton Row, W.C.1. CHA 8172.		MAGNETA TIME CO. LTD., Goblin Works, Leatherhead, Surrey. Ashstead 866.
	DAPAG (1943) LTD., Holborn Viaduct, E.C.1. CIT 5373.		MANIFOLDIA LTD., West Bromwich. West Bromwich 0506.
	DICTAPHONE CO. LTD., 107, Kingsway, W.C.2. HOL 4161.		
			MILNERS SAFE CO. LTD., 58, Holborn Viaduct, E.C.1. CEN 0041
			MODERN TELEPHONES (GT. BRITAIN) LTD., 101, Tottenham Court Road, W.1. MUS 9192.
			MONROE CALCULATING MACHINE CO. LTD., c/o Howard Panton Ltd., Kingsway Cham- bers, 162A, Strand, W.C.2. TEM 6158 & 8508.
			MOORE'S MODERN METHODS LTD., 19-21, Farringdon Street, E.C.4. CEN 3200.
			MULDIVO CALCULATING MACHINE CO. LTD., Albert Buildings, 49, Queen Victoria Street, E.C.4. CIT 3447.
			NATIONAL CASH REGISTER CO. LTD., 206-216, Marylebone Road, N.W.1. PAD 7070.
			NATIONAL LOOSE LEAF CO. LTD., 27-29, Curator Street, Chancery Lane, E.C.4. HOL 8644.
			OFFICE MACHINERY LTD., "Omni House", 22, Kingsly Street, W.1. MAY 1028.
			OFREX LTD., Ofrex House, Newman Street, W.1. MUS 8246.
			OZALID CO. LTD., 62, London Wall, E.C.2. MON 8321
			PETTY & SONS LTD., Whitehall Printers, Leeds, 12. Leeds 32341.
			POWERS-SAMAS ACCOUNTING MACHINES (SALES) LTD., Powers-Samas House, Holborn Bars, E.C.1. HOL 8711.
			RELIANCE TELEPHONE CO. LTD., 39-47, Parker Street, W.C.2. CHA 5341.
			REMINGTON RAND LTD., 1-19, New Oxford Street, W.C.1. CHA 8888.
			ROCKWELL-WABASH CO. (1909) LTD., 19-21, Farringdon Street, E.C.4. CEN 1380.
			RONEO LTD., 17, Southampton Row, W.C.1. HOL 7622.
			RONEO-NEOPOST LTD., 17, Southampton Row, W.C.1. HOL 4938.
			ROYAL TYPEWRITERS (THE VISIBLE WRITING MACHINE CO. LTD.) 27, Bankside, S.E.1. VAT 7551.
			SHANNON LTD., THE Shannon Corner, New Malden, Surrey. Malden 3262.
			SMITH, W. H., & SON LTD., Alcra Factory, Western Avenue, Acton, W.3. ACO 5801.
			STANDARD OFFICE SUPPLIES CO., 57, Farringdon Road, E.C.1. CHA 5561.
			STOLZENBERG PATENT FILE CO. LTD., 14, Queen Victoria Street, E.C.4. CIT 1078.
			TAN-SAD CHAIR CO. (1931) LTD., Avery House, Clerkenwell Green, E.C.1. CLE 3192.
			TELEPHONE RENTALS LTD., Kent House, Rutland Gardens, S.W.7. TEM 9292.
			TRADE LOOSE LEAF CO. LTD., Guidex Works, 99-102, Bradford Street, Birmingham, 12. Victoria 2511.
			UNDERWOOD ELLIOTT FISHER LTD., 4-12, New Oxford Street, W.C.1. CHA 3131.
			UNIFOLD MAILING MACHINES LTD., 20, Paxton Place, Gipsy Road, S.E.27. GIP 1002.
			UNIVERSAL POSTAL FRANKERS LTD., Frankpost Works, Angel Road, Edmonton, N.18. TOT 6361.
			WILSON, FRANK, & CO., P.O. Box 19, Southport.



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Fanfold Ltd. (25)
IBM United Kingdom Ltd. (51)
Jones, Percy, (Twinlock) Ltd. (38 & 44)
Kalamazoo Ltd. (27 & 33)
Manifoldia Ltd. (11 & 20)
Moore's Modern Methods Ltd. (6)
National Cash Register Co. Ltd. (75)
Powers-Samas Accounting Machines (Sales) Ltd.
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Remington Rand Ltd. (73)
Roneo Ltd. (32)
Smith, W. H., & Son Ltd. (50)
Underwood Elliott Fisher Ltd. (37)

ADDING MACHINES

Block & Anderson Ltd. (2)
British Olivetti Ltd. (9)
Bulmer's (Calculators) Ltd. (47)
Burroughs Adding Machine Ltd. (42)
Felt & Tarrant Ltd. (22)
Muldivo Calculating Machine Co. Ltd. (96)
National Cash Register Co. Ltd. (75)
Office Machinery Ltd. (64)
Underwood Elliott Fisher Ltd. (37)

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Addressograph-Multigraph Ltd. (63)
Adrema Ltd. (56)
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Lamson Paragon Supply Co. Ltd. (40)
Roneo Ltd. (32)
Smith, W. H., & Son Ltd. (50)

BOOK-KEEPING MACHINES, SYSTEMS AND EQUIPMENT

Anson, George, & Co. Ltd. (Office Machines),
(29)
Block & Anderson Ltd. (2)
Burroughs Adding Machine Ltd. (42)
Carter-Parratt Ltd. (15 & 17)
Columbia Ribbon & Carbon Mfg. Co. Ltd. (10)
Jones, Percy, (Twinlock) Ltd. (38 & 44)
Kalamazoo Ltd. (27 & 33)
Moore's Modern Methods Ltd. (6)
Remington Rand Ltd. (73)
Underwood Elliott Fisher Ltd. (37)

CALCULATING MACHINES

Block & Anderson Ltd. (2)
British Olivetti Ltd. (9)
Bulmer's (Calculators) Ltd. (47)
Burroughs Adding Machine Ltd. (42)
Felt & Tarrant Ltd. (22)
IBM (United Kingdom) Ltd. (51)

London Office Machines Ltd. (31)
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Shannon Ltd., The. (74)
Standard Office Supplies Co. (78)
Trade Loose Leaf Co. Ltd. (59)
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Carter-Davis Ltd. (67)
Egry Ltd. (49)
Fanfold Ltd. (25)
Gledhill, G. H., & Sons Ltd. (56)
Lamson Paragon Supply Co. Ltd. (40)
London Office Machines Ltd. (31)
National Cash Register Co. Ltd. (75)
Smith, W. H., & Son Ltd. (50)

CHEQUE SIGNING MACHINES

Roneo-Neopost Ltd. (93)

CHEQUE WRITING MACHINES

Burroughs Adding Machine Ltd. (42)
Halsby & Co. Ltd. (66)
Office Machinery Ltd. (64)
Remington Rand Ltd. (73)
Underwood Elliott Fisher Ltd. (37)

CONTINUOUS STATIONERY, FORM FEEDING & FORM WRITING MACHINES

Carter-Davis Ltd. (67)
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Fanfold Ltd. (25)
Lamson Paragon Supply Co. Ltd. (40)
Manifoldia Ltd. (11 & 20)
Moore's Modern Methods Ltd. (6)
Petty & Sons Ltd. (68)
Smith, W. H., & Son Ltd. (50)
Underwood Elliott Fisher Ltd. (37)

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Ofrex Ltd. (84)
Universal Postal Frankers Ltd. (76)

DESKS AND PARTITIONING

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Art Metal Construction Co. (85)
Aston Cabinet Co. Ltd. (48)
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Constructors Ltd. (77)
Ford, Frank R., Ltd. (35)
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Expandex Visible Filing Co. Ltd. (12)
London Office Machines Ltd. (31)
Office Machinery Ltd. (64)
Royal Typewriters. (65)

DOCUMENT COPYING EQUIPMENT

Burroughs Adding Machine Ltd. (42)
Copycat Associated (Marketing) Ltd. (46)
Ellams Duplicator Co. Ltd. (16)
Gesstner Ltd. (39 & 43)
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Bulmer's (Calculators) Ltd. (47)
Ellams Duplicator Co. Ltd. (16)
Ford, Frank R., Ltd. (35)
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Ofrex Ltd. (84)
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ENVELOPES SEALING AND OPENING MACHINES

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International Coin Counting Machine Co. Ltd.
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FILING CABINETS

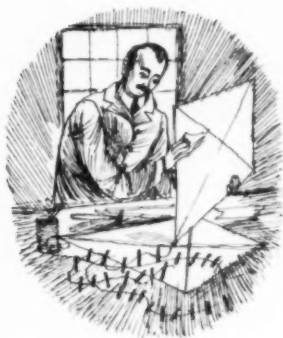
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Bulmer's (Calculators) Ltd. (47)
Business Publications Ltd. (85)
Carter-Parratt Ltd. (15 & 17)
Cave, C.W., & Co. Ltd. (55)
Expandex Visible Filing Co. Ltd. (12)
IBM United Kingdom Ltd. (51)
Jones, Percy, (Twinlock) Ltd. (38 & 44)
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Roneo Ltd. (32)
Shannon Ltd., The. (74)
Trade Loose Leaf Co. Ltd. (59)

WAGES PAYING

Adrema Ltd. (26 & 34)
Hayward Co. (Addressing Machines) Ltd. (82)
Jones, Percy, (Twinlock) Ltd. (38 & 44)
National Cash Register Co. Ltd. (75)

WATCHMAN'S SUPERVISORY SYSTEMS

IBM United Kingdom Ltd. (51)
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SECTION ONE

PROGRESS REPORT

Adding and Calculating Machines

THIS section covers all non-listing adding and calculating machines. It also covers the simpler forms of listing machines, though the more complex models naturally fall into the sections on book-keeping and pay-roll equipment and on punched cards and ancillary equipment. Here we are concerned exclusively with machines that can help the office manager in his work without calling for the redesigning of forms and procedures or for changes in

of what an adding machine should be. Today there are probably more different makes of this type available than of any other. In the more complex models, a touch on a motor bar enables electricity to do the pulling. Direct subtraction and duplicate storing registers are also embodied in them.

IN the second type (the Comptometer was the original model), the actual pressure on the keys compresses springs, which, as they push the keys back into position, actuate the adding mechanism. There is no handle, motor bar or printing mechanism; the total is visible on dials immediately the keys have been pressed. This class of machine has thus a very high speed potential, while the absence of printing mechanism makes it lighter, simpler and cheaper.

Subtraction is effected by the addition of complements, and, in expert hands, these machines can also serve as first-class calculators. In the more expensive models electricity reduces the manual effort of depressing keys to a mere touch, giving enhanced speed and reducing the possibility of error due to partial depression. Non-listing models of this type are displayed on stands 22 and 42. In the duplex electric adding calculator on stand 42, depression of one key both clears the normal front dials and transposes the amount to a second register at the rear. Alternatively, pressure on another



The Marchant 10 E.F.A. calculator.

personnel. They are, therefore, just as suitable for the small office as for the large.

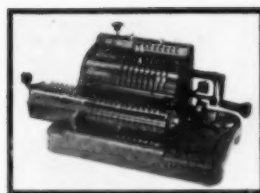
THERE are two types of adding machine:—

(1) The listing, key-set, full-keyboard machine, and its offshoot, the 12-key listing keyset machine; and

(2) The non-listing, key-driven, full-keyboard machine, and its offshoot, the five-key or half-keyboard machine.

In the first type (the Burroughs was the original model), keys are pressed to set each sum to be added, with noughts setting themselves. When the number is set, a handle is pulled, which adds the sum to the previous total and simultaneously prints it on a roll of paper. To obtain a total, the handle is pulled twice, a "total" key being depressed on the second occasion, when the total is printed automatically.

This type is simple and straightforward, and corresponds most closely to the average clerk's idea



The new Hamann calculators

key clears the front dial and deducts their amount from the rear register.

MANY expert users of full-keyboard machines never use the top half of the keyboard. This has led to the development of the half-keyboard machine, which contains no key higher than 5. For 6, the 3 key is depressed twice; for 7, the 4 and 3 keys are depressed, and so on. The half-keyboard machine has less than half the complications, less than half the weight and size, and costs considerably less than half as much as its full-keyboard counterpart. It can be passed about an office without a suspicion of effort or strain, takes up little room on a desk, and can be tucked away in a drawer when not in use.

THE twelve-key machine sprang, I fancy, from the makers of components of the original tabulating machines. Since even the old tabulating card had as many as 45 columns, the idea of punching one column at a time and then moving the card forward seemed the obvious solution. This reduced the number of keys needed to 12.

In the adding machine increased operating speed is obviously easier to attain with 12 keys in place of 120 or so. Moreover, there is no need to align the correct column before depressing a key, a fact that considerably relieves eye-strain and brain fatigue in lengthy operations.

Time tests on this type of machine—the Sundstrand on stand 37, and the Olivetti on stand 9, are examples—suggest that operative speed compares favourably with that of key-driven machines when the test includes

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

BLOCK & ANDERSON LTD. (2)

BRITISH OLIVETTI LTD. (9)

BULMER'S CALCULATORS LTD. (47)

BURROUGHS ADDING MACHINE LTD. (42/50)

FELT & TARRANT LTD. (22)

IBM UNITED KINGDOM LTD. (51)

LONDON OFFICE MACHINES LTD. (31)

MONROE CALCULATING MACHINE CO. LTD. (62)

MULDIVO CALCULATING MACHINE CO. LTD. (79)

NATIONAL CASH REGISTER CO. LTD. (75/89)

OFFICE MACHINERY LTD. (64)

UNDERWOOD ELLIOTT FISHER LTD. (37)



PROGRESS REPORT ADDING & CALCULATING MACHINES

record of the answer; this is, of course, automatic on these machines, but has to be copied from the key-driven machine.

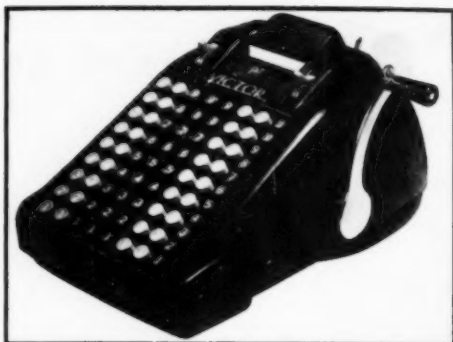
The more expensive models of 12-key listing machines embody direct subtraction, electric drive and duplex registers as in the full-keyboard machines. A new development, to be seen on stand 42, is the Sundstrand *Tabulator*, which can be converted at the touch of a key from a fully-automatic duplex adding machine to a fully-automatic 13ins. single-feed shuttle-carriage machine.

THE calculating machine was not originally devised for the use of the business community, but for the actuary. In recent years, however, its use has spread rapidly in business houses. It consists essentially of a barrel organ that grinds out multiplication when the handle is turned in one direction, and division when it is turned the other. The operator causes teeth to project from the barrel according to the digits to be multiplied (or divided), and

the accumulator is slid sideways for multiplying by units, tens, hundreds, etc. A turn of the handle adds (or subtracts) the figures represented by the projecting teeth once, two turns twice, three turns thrice, and so on, when the machine is in the units position. Shifting it laterally to the tens position means that a single turn adds (or subtracts) the figures ten times.

The small *Brunsviga*, on stand 2, well known in this country for many years, and the incredibly small and handy *Curta*, on stand 31, which has only recently arrived, are typical examples, out of many, of this type of machine. These simple, hand-operated barrel machines are comparatively inexpensive, yet do not require the finger and manual dexterity essential for calculation work on the key-driven adding machine.

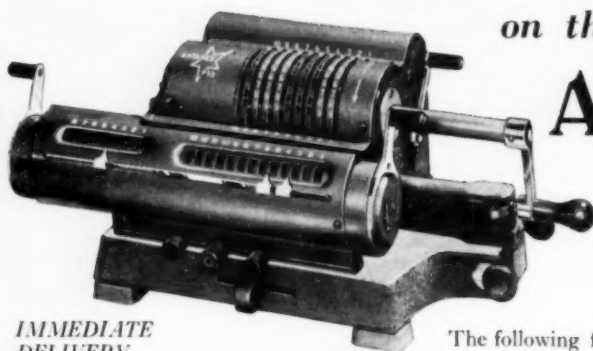
In the more expensive models keys take the place of levers for more rapid setting, electricity turns the barrel, and the number of turns, the direction of turning, and the sliding to and fro of the



The new Victor adding-listing machine.

accumulator are all controlled by keys. These, with other minor refinements, give increased automaticity, scope and speed.

There is, however, a limit to the speed at which a barrel can revolve without damaging the carry-over mechanism. In the *Marchant*, on stand 2, however, a gradual carry-over device permits the barrel to revolve at something like four times the otherwise safe speed limit without injury to its mechanism, and thus increases the potential speed of calculation accordingly.



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The following features make it an outstanding machine:—

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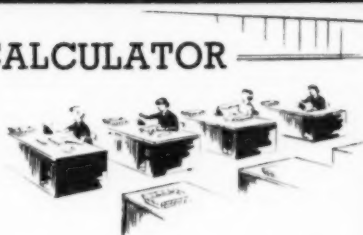
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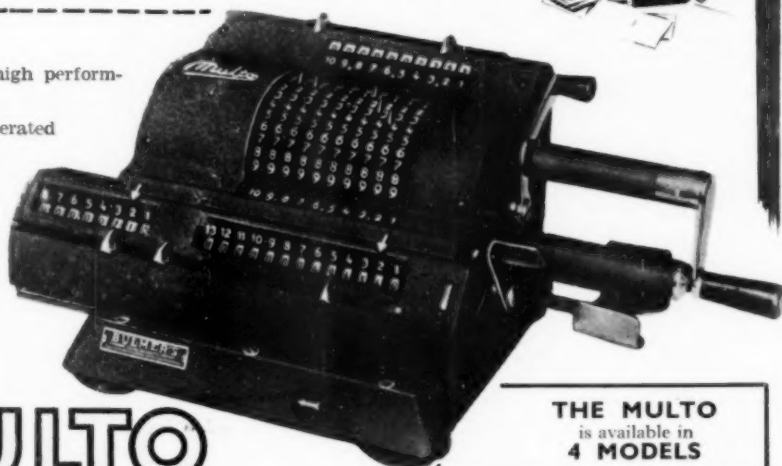


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THE MULTO is available in 4 MODELS

MODEL 3—10 figure Setting-board, Result Register 13 figures, Proof Register 8 figures. £49

MODEL 13—Similar to Model 3 but with back transfer device. £59

MODEL 103—As Model 3, but with full tens transmission. £59

MODEL 113—As Model 103—and with back transfer. £69

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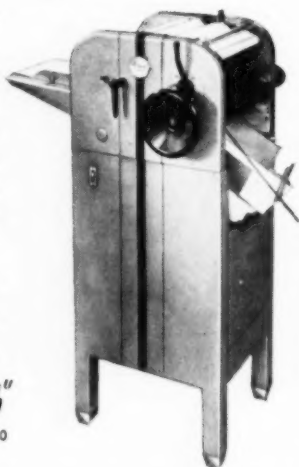
Then come and see our latest range of office machinery on—

A full range of "Addressograph" models, including the new "Hollerith" punched-card link-up machine illustrated above, will be on view at this exhibition, together with "Multilith" models 1250 and 50.

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"Multilith"
MODEL 50



**Stand
63**

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SECTION TWO

PROGRESS REPORT

Addressing and Mailing Equipment

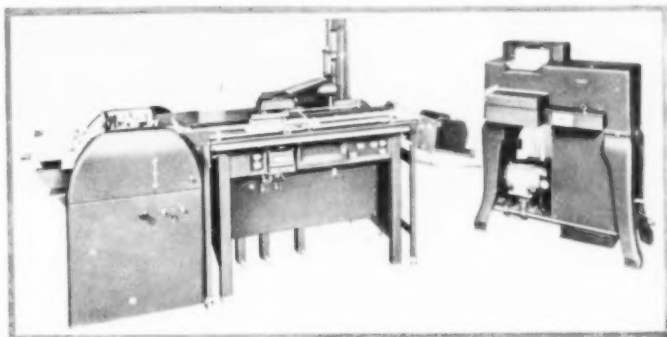
ALTHOUGH the addressing machine has been on the market for nearly 50 years, new uses are still being found for it, since it is, perhaps, the most useful confederate of all office machines. It helps accounting machines, multiple posting equipment, punched card machines (which, incidentally, have developed addressing facilities of their own), control planning routines, and many other office functions, in addition to its humdrum job of printing names and addresses.

Manual copying of addresses takes much time and is open to error. With an addressing machine, the address is copied only once, on to an embossed plate, stencil or miniature spirit master. The envelopes or other documents may then be printed therefrom with infallible fidelity as many times as required over a period, if necessary, of years, without possibility of error through mis-copying. The addressing machine is thus, in essence, a special form of printing or duplicating machine, in which a number of small-uniform-sized masters are retained conveniently for use when wanted.

THE use of addressing machines in the office is in no way limited to addressing. Indeed, there appears to be scarcely any limit to their field of usefulness, except that of minimum usage. Use has developed on four main lines, for each of which special ancillary equipment has been devised:—

- (1) Using the automatic feed of masters to print from all, or a selection, of them on to hand-fed documents, such as circulars, dividend warrants, statements, etc.;
- (2) Using the automatic feed of masters in conjunction with an automatic listing device, to print a list, such as a dividend list, pay list, punched card list, etc.;
- (3) as (2), but also using a masking device, so that successive single lines of matter which lie

below each other on the master are reproduced side by side on the document as a single line or entry across a wide sheet of paper, either by passing the masters through as many times as there are lines, or by special mechanisms which render this unnecessary. Examples of this type in-



The Addressograph Class 1900 with automatic suction feed and Hollerith punched card control.

clude pay listing, municipal records, etc.; and

(4) Single printing, in which masters selected by hand from a pack are printed (with or without masking) on one or more hand-fed documents, the master being replaced in the pack before the next one is selected. Examples include the printing of orders, labels, invoices, accounting and statistical

copies, the decoding of telegraphic addresses, etc.

Of these four uses, the first three conform closely to the general idea of speed and automaticity, and form a rising scale of mechanical development and corresponding capital outlay. The fourth, however, is so cheap, so simple and so unimpressive that it too often escapes attention. Yet it is this class of machine that serves what may well be the latest and most significant use of this machinery.

Not every job needs all the plates (the term may be used to include stencils and spirit masters) all the time. All machines can, of course, skip as required, but there

is a limit beyond which skipping becomes uneconomical. In particular, if a number of prints are needed on selected forms, the operative speed is determined mainly by the speed at which the forms can be fed, since the speed of feeding the master is spread over several forms. In these circumstances, the small hand-fed and hand-operated machine can fill many needs more efficiently than its bigger brothers, and the comparatively small capital outlay involved brings it within reach of the small business.

THE latest use of single-print addressing machines, for invoicing work, involves the "card-per-unit" principle developed in punched card work. Suppose a firm sells 20 products. Orders received for each product tend to be distributed over a fairly narrow quantity range, which an analysis of past orders will reveal. For one product, for instance, orders may range from one dozen to five

EXHIBITORS

Stand nos. in brackets: addresses, etc., on page 69

- ADDRESSALL MACHINE CO. (61)
 ADDRESSOGRAPH-MULTIGRAPH LTD. (63)
 ADREMA LTD. (24 & 34)
 BLOCK & ANDERSON LTD. (2)
 FANFOLD LTD. (25)
 FORD, FRANK R. LTD. (35)
 HAYWARD CO. (ADDRESSING MACHINES) LTD. (81 & 82)
 INTERNATIONAL COIN COUNTING MACHINE CO. LTD. (53)
 LAMSON PARAGON SUPPLY CO. LTD. (40)
 RONEO LTD. (32)
 RONEO-NEOPOST LTD. (91)
 SMITH, W. H. & SON LTD. (50)
 UNIFOLD MAILING MACHINES LTD. (83)
 UNIVERSAL POSTAL FRANKERS LTD. (76)



PROGRESS REPORT

ADDRESSING AND MAILING EQUIPMENT

gross, in, say, 20 steps. Thus every normal combination of quantity and product may be covered in about 400 masters. A batch of 400 such masters is, therefore, prepared, each giving the quantity, description of goods, price, value of any purchase tax due and extension of the invoice value. These are then stored in a suitably indexed trays, together with the normal heading plates.

When an invoice set has to be prepared, each commodity plate called for on the invoice is selected, stamped on the forms comprising the set and replaced in turn. The heading plate is then selected, and all forms, including any labels, etc., required for the order are stamped, together with the date, before it is replaced. In this way the whole invoice set, etc. (with the exception of the grand total), may be produced by the addressing machine with remarkable speed and unquestioned accuracy.

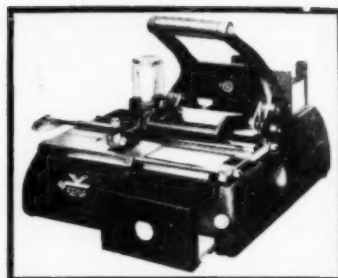
Of the three methods of printing, embossed plates and stencils

have won acceptance for many years, and each method has its devoted and satisfied users. Of the two, the stencil is lighter, takes less storage space, can provide space for the accounting record on the holder, uses no ribbon, makes less noise, and can be cut on a typewriter. The metal plate is stronger, lasts longer, and can be used to reproduce carbon copies and spirit masters, which the stencil cannot.

The application of spirit dupli-



The Simplex postal franking machine.



The hand-operated Renaddress spirit addressing machine

cation to addressing machines is comparatively recent; two small machines were introduced to the British market last year, but the first full-size models are the Renaddress machines, now exhibited for the first time and to be seen on stand 2.

Spirit masters are cheaper than stencils or metal plates, and the method can, therefore, be used economically where the total repetition is less than would warrant the installation of stencils or plates. On the other hand, duplicating capacity is less than either of the alternatives.

continued on page 110

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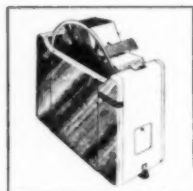
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SECTION THREE

PROGRESS REPORT

Book-keeping and Payroll Equipment

AUTOMATIC book-keeping can be achieved in many ways, and each has had its application in book-keeping and pay-roll equipment. In the systems using printed forms and interleaved carbon paper, which, for want of a better term, we may call multiple posting equipment, a single record made on the top sheet of a pad is carboned, in its right place, on to all sheets lying behind or underneath it.

In book-keeping machines carbon duplication may be supplemented or even entirely supplanted by repeat printing, i.e., using one figure set-up more than once, or by a number of printing mechanisms working together.

tively simple and straightforward, and large, centralized pay-rolls can probably best be produced with these machines.

But the greater part of the business world is made up of firms employing 26 workers or less. Such firms could not make effective use of such machines, even if they could afford them, and must obviously make do with something considerably less impressive which they can afford. It is here that the various multiple posting devices come into their own.

The more recent developments include a redesigned model of the *Anson* on stand 29, and the *Visicopier* on stand 74.

Most devices of this type are based on carbon duplication; a model that uses spirit duplication is the *Banda* ledger posting machine on stand 2.

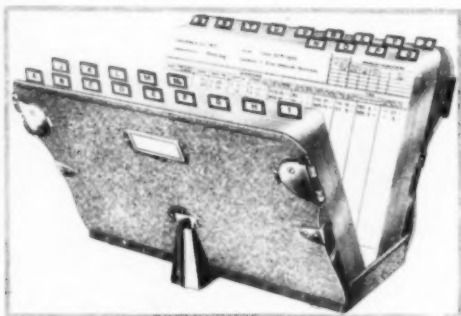
THERE is a definite and characteristic cleavage between adding machines which have developed typewriting propensities and typewriters



The new Underwood Sundstrand book-keeping machine.

which have developed adding propensities.

The first type is represented by the *National Class 31* on stands 75 and 89, the *Underwood Sundstrand Class D* on stand 37, and the *Burroughs Class 78*, and the advanced modern counterpart of the original *Burroughs* on stands 42 and 90. In the *National Class 31*, a typewriter has, so to speak, been built in to a very highly-developed multi-register, full-keyboard, adding-listing machine with extraordinary visibility at the printing end. In the *Burroughs Class 78*, a full typewriter unit is incorporated into a very fine multi-register adding machine (and, incidentally, on decimal models a very fine direct calculating machine); the full keyboard, however, is not included, its place being taken by keys not unlike those of the normal typewriter. The machine is essentially blind, but gets some visibility by reflectors and internal lighting. Both the *National* and the



The new Twinlock machine posting tray.

METHODS of holding carefully-planned and precision-printed forms in discriminative registration so that a single writing produces authentic entries in the necessary number of accounting entries or the like have been known and (to some extent) used in this country for decades. The advent of P.A.Y.E. and universal insurance, however, gave a tremendous fillip to their widespread adoption.

These deductions are largely determined by uniform State regulations; there is a uniform pattern and, therefore, a uniform solution. With the use of accounting machines and punched card equipment, the solution is compara-

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

ADDRESSOGRAPH-MULTIGRAPH LTD. (63)
ADREMA LTD. (26 & 34)
ANSON, GEORGE, & CO. LTD. (29)
BLOCK & ANDERSON LTD. (2)
BRITISH TABULATING MACHINE CO. LTD. (45 & 94)
BURROUGHS ADDING MACHINE LTD. (42 & 90)
CARTER-DAVIS LTD. (67)
CARTER-PARRATT LTD. (15 & 17)
COLUMBIA RIBBON & CARBON MFG. CO. LTD. (10)
FANFOLD LTD. (25)
HAYWARD CO. (ADDRESSING MACHINES), LTD. (82)
IBM UNITED KINGDOM LTD. (51)
JONES, PERCY, (TWINLOCK) LTD. (38 & 44)
KALAMAZOO LTD. (27 & 33)

LAMSON PARAGON SUPPLY CO. LTD. (40)
MANIFOLDIA LTD. (11 & 20)
MOORE'S MODERN METHODS LTD. (6)
NATIONAL CASH REGISTER CO. LTD. (75 & 89)
NATIONAL LOOSE LEAF CO. LTD. (18)
POWERS-SAMAS ACCOUNTING MACHINES (SALES) LTD. (8 & 23)
REMINGTON RAND LTD. (73 & 93)
RONEO LTD. (32)
RONEO-NEOPOST LTD. (91)
SHANNON LTD., THE. (74)
SMITH, W. H., & SON LTD. (50)
TRADE LOOSE LEAF CO. LTD. (59)
UNDERWOOD ELLIOTT FISHER LTD. (37)



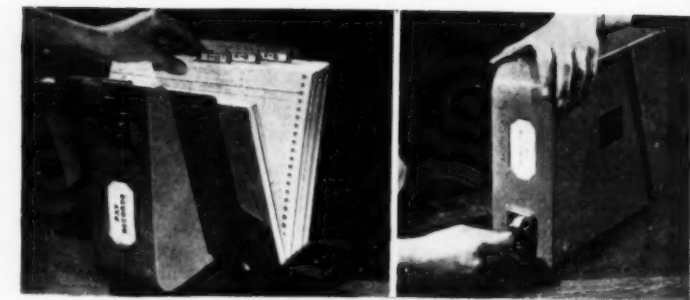
PROGRESS REPORT

BOOK-KEEPING & PAYROLL EQUIPMENT

Burroughs 78 type print whole sums or answers at a single blow, adding machine fashion.

In the case of the *Underwood Sunstrand Class D* and the standard *Burroughs* no attempt is made to incorporate full typewriting facilities; instead, special keys are provided to print symbols of the more usual accounting designations, such as Credit, Debit, To Goods, By Cash, etc., together with non-additive numbers for reference purposes. This means that less transcribing, with its eternal error potential, and greater speed of operation.

Another high-powered book-keeping machine, the *National Class 2000* (stands 75 and 89) differs radically from all other accounting machines. It looks like an overgrown cash register, but has a most deceptive speed, some 30 registers and the power of printing identical original entries on a number of different forms at the same time, no car-



The Kalamazoo posting tray and box.

bons, no repeat printing, and no carriage.

The second type of book-keeping machine, the glorified electric typewriter, owes its capacity to add or subtract to the invention of a very narrow key-driven adding unit which, so to speak, perches on the carriage of the typewriter and collects its figures from the action of the relative type-bars. It is driven by the type-bars whenever the carriage is in the correct position, and is inherently a non-lister devoid of automatic controls. As many adding units can be

hooked on as the carriage will hold, and they are made in varying capacities, for varying weights, measures and currencies. Any one set can be used as wanted. Each register shows the total within it, and this total is cleared from the register and printed on the account by the operator tapping the appropriate keys on the typewriter. In some of the more elaborate *Remington* models, such as the *Foremost*, to be seen on stands 73 and 93, this can be done electrically and automatically, one figure at a time.

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The ORIGINAL-ODHNER range of Calculators represents the last word in efficiency aids.

These inexpensive machines carry no costly "gadgets" or "extras"—devices that would increase the cost and complicate the construction have been eliminated.

The ORIGINAL-ODHNER is "streamlined" down to main essentials—the result is that each Model is easy to handle, needs no trained operator, and yet is so efficient and inexpensive that if one is used by a junior clerk for ten minutes a day it will pay for itself within a year.

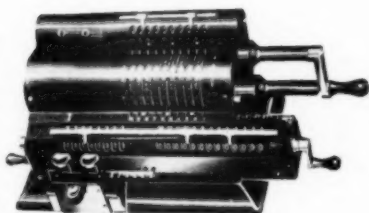
Well-known throughout the world, the Swedish ORIGINAL-ODHNER Calculating Machines are once again available in this country. Each machine carries a twelve months' guarantee by the importers Gilbert Wood (A/M), Ltd., who have handled them for over 30 years.

"The machine to COUNT on"

MODEL 39

(as illustrated)

price £68



OTHER MODELS FROM £35 NETT.

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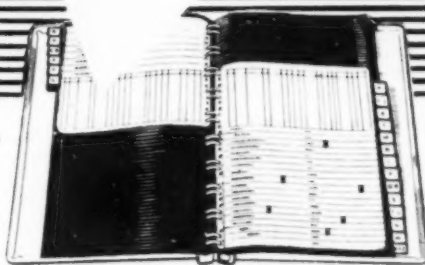
3-77 NORWOOD ROAD, LONDON, S.E.24. Tel: Tulse Hill 7211

Northern Office: 33, Brown Street, Manchester. Telephone: Bla. 1902

FEBRUARY, 1952

WHAT DELIVERIES ARE OVERDUE?

To whom?
From whom?



FACTS cry out for action in this NEW FASTEST record system!

Nowadays, executives want facts always before their eyes. They don't want to **search** for them. Indeed the demand is for salient facts to **obtrude** themselves upon the attention.

This is the job of the new Shannoleaf system. It was designed just for this purpose. Each record is visibly separate, the overlapping edge summarising the story on the record. This edge tells you all you want to know at a glance. And if you wish to pin-point special items coloured signals do just this—pointing out urgent deliveries, overdue payments, sales positions, running contract commitments.

There are standard Shannoleaf records to meet all needs. Equally, records can be designed specially to your instructions. Whichever you have, you have a **streamlined** system—the speediest for reference, the fastest for entry. One clerk can handle thousands of such records.

Just write "Shannoleaf" on your letter heading and full details will be sent you by return.

NOTE—All the advantages of Visible records PLUS the filing of related documents, the correspondence, etc., can be had in Shannograph. This unique system gives the same visual control plus housing related papers. Add the word "Shannograph" to your letter heading if you are interested.

Shannon Systems

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The Shannon Ltd.

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Immediate Delivery of Office Furniture

We can offer
a wide variety
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Furniture for
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Write for
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Steel four drawer
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Tan-Sad typist's
chair: adjustable
seat and back.
£6-2-6

Typist's desk with
three drawers and
slide. 4'0" (inc.
flap) x 1'8" x 2'4"
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Double pedestal
desk in oak.
4'6" x 2'6" x 2'6"
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SIMPLEX - gives auto-
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SIMPLEX - prints YOUR
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SIMPLEX - can be justified
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per day.

Business Efficiency
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February 15th-29th
Stand No. 76

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86

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Prints up to 29/11½d or lesser maximum
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(Electrically operated)
High Speed Franking and
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SECTION FOUR

PROGRESS REPORT

Cash Recording and Handling Equipment

CASH registers and similar machines may help salesmen behind the counter rather than the clerk in the office. But office work is not limited to the precincts of the office; much of it is done as a secondary task by workers whose main activity is something else. By helping them to do the office work easily and rapidly, the machine enables them to devote more time to their main work.

The cash register is a case in point. The salesman's job is to sell—not to write out tickets or add up sums. And this is just what the cash register does for

The mechanized cash register, however, is unsuitable in cases where information is required in detail concerning every transaction. A number of machines, working on the principle of multiple posting, enable a hand-written receipt to be made out at the time of the sale, and provide for the maintenance of one or more copies of this within the register. A new model on stand 40, the *Paragon 6003*, enables three different cash tills to be used with the same register. Another model on the same stand incorporates a dating and timing mechanism, which automatically prints the correct date and time when the lever is depressed to eject the completed form.

The hand-written registers do not, of course, incorporate any adding mechanism, but the work of summation may be carried out at comparative leisure in the office from the carbon copies, either by preliminary adding or as part of a posting procedure.

WHEN cash has been recorded, there still remains the task, at the end of the day, of counting takings and reconciling these with



The new Paragon 6003 cash register.

the recorded amount. In large concerns the counting of coin may well be a lengthy procedure and subject to error, and the mechanical counters on stand 53 will save considerable amounts of overtime and materially assist in the preparation of cash for banking and for "floats." The counting of banknotes is another time-wasting task that the machine has now taken over. A prototype of the *Totometer* was shown last year at Olympia, but the machine, to be seen on stand 76, is now in production in this country.

Most office machinery has been devised primarily to save time. Where cash is concerned, security is of equal importance, and the use of suitable machinery will not only enable salesmen and office workers to get their job done more quickly, but will ensure managements that the possibility of pilferage has been eliminated—or at any rate made vastly more difficult.



The Totometer money counting machine.

him—rapidly and accurately. The mechanized form of cash register consists of an adding-listing machine connected up to a cash till or drawer. The name of *National* is inextricably linked with this form of machine, and so ubiquitous are the various models produced by this firm that it is sufficient to say that the complete range can be seen on stand 75. Other makes may be seen on stand 31, where the *Sweda* appears for the first time, and on stand 560. The *Sweda* prints an itemized ticket, can have up to ten totalizers and 22 counters. It has a capacity of £100 in setting and £1,000 in total, less 4d. in each case.

EXHIBITORS

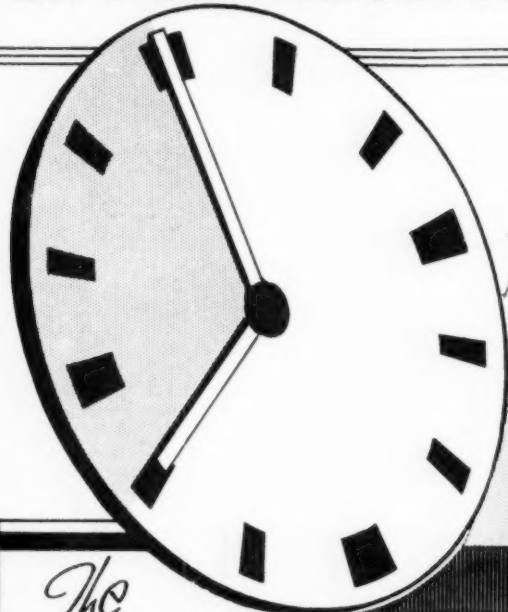
Stand nos. in brackets; addresses, etc., on page 69

ADREMA LTD. (26 & 34)
BURROUGHS ADDING MACHINE LTD. (42 & 90)
CARTER-DAVIS LTD. (67)
EGRY LTD. (49)
FANFOLD LTD. (25)
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UNDERWOOD ELLIOTT FISHER LTD. (37)
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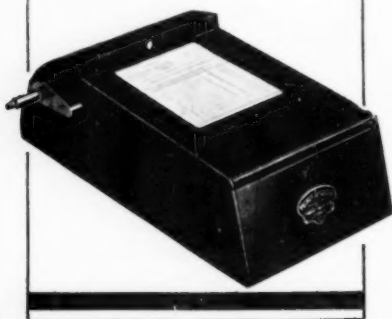
The new Sweda cash register.

Save One Third on Typing Time!



The PRIMUS STANDARD REGISTER

For HAND-WRITTEN RECORDS, the Primus Register used in conjunction with Continuous Stationery ensures the same speedy, smooth operation, while a copy automatically locked in the machine provides your auditor with a check on each transaction.



—ISN'T IT WORTH YOUR INVESTIGATION?

By eliminating all unproductive operations—interleaving and extracting loose carbon sheets, inserting and aligning separate stationery forms PRIMUS saves one hour in every three on invoicing, works orders, goods received notes, purchase orders and other tasks of a repetitive nature. PRIMUS forms, used in conjunction with the attachment which will fit any make of typewriter, are fed smoothly into the machine so that the typist is engaged all the time on productive work.

PRIMUS

Continuous
Stationery

CARTER-DAVIS LTD.

QUEEN ELIZABETH ST., LONDON, S.E.1. Tel: HOP 0204-5-6

Branches at: BIRMINGHAM—MANCHESTER—DUBLIN—GLASGOW

On view at Stand No. 67, BUSINESS EFFICIENCY EXHIBITION, BINGLEY HALL, BIRMINGHAM, February 19th—29th.

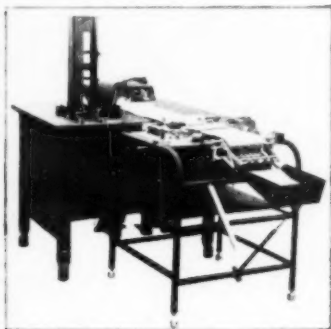


SECTION FIVE

PROGRESS REPORT

Continuous Stationery Equipment

PERHAPS the most important single contribution to the speeding up of office work was the invention of carbon paper, with its more recent developments of the one-time carbon and the carbon-backed form. Carbon paper has reduced manual copying; it has also allowed mechanical writing machines, such as typewriters, adding-listing machines, addressing machines, tabulators, etc., to



Paragon Form-Feed and Detacher

produce simultaneously as many as 20 copies of written material.

In the routine production of multiple sets of documents in a machine by using carbon paper, however, a very considerable proportion of the operator's time is taken up in assembling the blank forms, interleaving the carbons, securing accurate register, inserting the assembly into the machine and removing it from it.

CONTINUOUS stationery was evolved to reduce the time taken up in these preparations. By the ingenious use of precision printing, folds and perforations, letterheads and forms are produced in a continuous band, while mechanical devices enable the carbon paper to be moved automatically from one set to the next.

This principle underlies all systems of continuous stationery, though individual firms naturally have their own means of applying

it. In the *Fanfold* system on stand 25, for instance, the forms are printed on a wide continuous roll, as wide as all the forms of one batch arranged side by side. The roll is printed on alternate sides, and the paper creased or pleated so that the strip is as wide as one form, and then folded endwise to form a rectangular block, as long as one form and as deep as the combined thicknesses of one unit of supply. This supply reposes in its carton behind the machine, which is equipped with a special device for holding the carbon paper between the "pleats." The first batch of forms is fed into this device by hand. As each batch is typed it is either torn off at perforations or cut, and the forms separated as required. One batch automatically draws the next into place. A recent development allows metal fingers, which hold the carbons in place, to carry a materially greater supply of carbon paper, so that the renewal of carbons does not have to be carried out so often. Alternatively, a non-smear permanent-record carbon backing can be used on the whole or part of the back of each form, eliminating the use of a separate carbon paper completely.

This, of course, eliminates a carbon handling operation, and by reason of the fact that the carbon is on the forms themselves, the thickness of the sum of all the



The IBM Electric Formwriter.

material which is normally carbonized, i.e., which carries the carbon in the normal way, is also eliminated—which means more and better carbon copies. Again, this carbon can be placed just where it is wanted, and left off where it is not wanted. Besides saving carbon, this also means that it can be so arranged and planned that certain things copied on one form may be omitted from another automatically.

IN the *Alacra* system, on stand 50, the problem is tackled from a different angle. It consists of a series of long strips of paper—as many strips as there are forms in the set—interleaved with long strips of carbon paper. These are effectively aligned at the crucial moment, i.e., at the printing line, by a device that forms part of the platen of the machine. This device has a series of retractable pins at each end of the platen, which automatically protrude and retract to engage precision-punched holes in the forms at the point at which they approach the printing line.

This engagement between punch holes and pins, which completely dispenses with the need for friction rollers in feeding, controls all copies positively in every direction, and guarantees that they will be brought into exact registration at the writing line. This is of the utmost importance when there are a considerable number of parts in a set (and where errors due to fanning out are greatest), and where typed entries must align exactly against printing on the form, e.g., against single-spaced descriptive items.

FOR hand-written forms, used either at the desk or counter, or in the field, there are a number

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

BURROUGHS ADDING MACHINE LTD. (42 & 90)
CARTER-DAVIS LTD. (67)
EGRY LTD. (49)
FANFOLD LTD. (25)
GLEDDHILL, G. H., & SONS LTD. (56)
LAMSON PARAGON SUPPLY CO. LTD. (40)
MANIFOLDIA LTD. (11 & 20)
MOORE'S MODERN METHODS LTD. (6)
NATIONAL CASH REGISTER CO. LTD. (75 & 89)
PETTY & SONS LTD. (48)
SMITH, W. H., & SON LTD. (50)
UNDERWOOD ELLIOTT FISHER LTD. (37)



'I can help you in your office

not only with the appearance of your letters but in the speeding up of your other office work. As an Imperial Agent I can give you details of the most efficient typewriter installation for your particular business.'

Your nearest Agent is in the Telephone Directory under Imperial Typewriters.



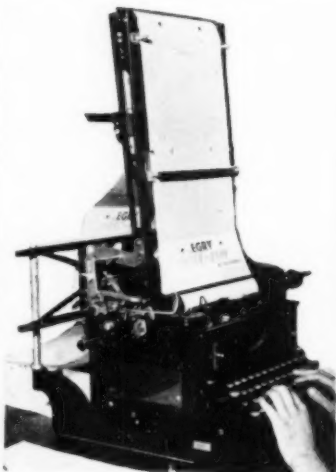
Imperial Typewriters *and Service*

IMPERIAL TYPEWRITER COMPANY LIMITED, LEICESTER.



PROGRESS REPORT

CONTINUOUS STATIONERY EQUIPMENT

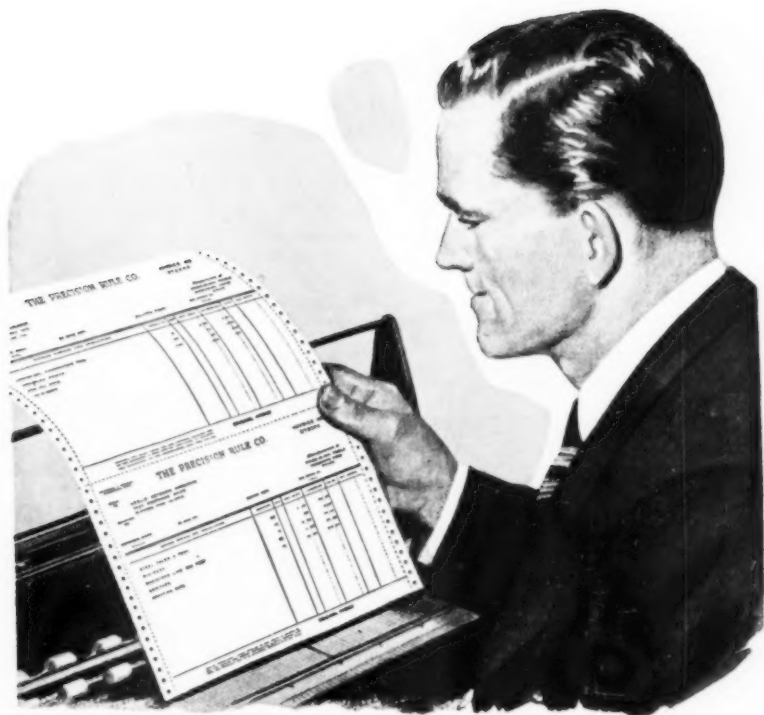


Speed-Feed unit by Egly Ltd.

of registers available for holding continuous stationery, some extremely portable, others less so. One such, designed for use in conjunction with a cash register, is arranged so that the bottom carbon is fed automatically into a locked compartment.

Several firms also produce special machines which separate or "burst" the different completed sets of forms into individual sheets at high speed, and even provide for marking the sheets with some form of information common to all at the moment of separation.

Continuous stationery demands a high degree of specialized precision printing on the part of the manufacturer, and cannot, therefore, be cheap. On the other hand, the number of clear copies that can be obtained is remarkably high. One maker claims 20 from a modern electric typewriter, 14 from a standard typewriter, and six from a hand-written register. With results of this order, the additional expenditure incurred is in many cases offset many times by the saving in wages secured by the economy in man-hours obtained.



FANFOLD LTD. produces

TABULATING FORMS

for all purposes!

A special tabulating division exists in the Fanfold Organization to handle the specialised field of punched card accounting. We suggest you contact us in connection with your sprocket punched and/or cut set tabulating stationery requirements. We shall be pleased to place the services of this department at your disposal entirely without obligation.

See our special display of forms and equipment at Stand No. 25, Business Efficiency Exhibition, Birmingham, February 19th—29th.



NORTH CIRCULAR ROAD, LONDON, N.W.2

Telephone: GLAdstone 5477 (4 Lines)

and at BIRMINGHAM, CARDIFF, MANCHESTER,
SHEFFIELD, GLASGOW, DUBLIN & BELFAST

PLANNERS OF SYSTEMS FOR ECONOMY OF
TIME, LABOUR AND MATERIALS IN THE
OFFICE

Fanfold
for Forms

Fanfold
for Forms

SEE DEMONSTRATED

at the
BUSINESS EFFICIENCY EXHIBITION

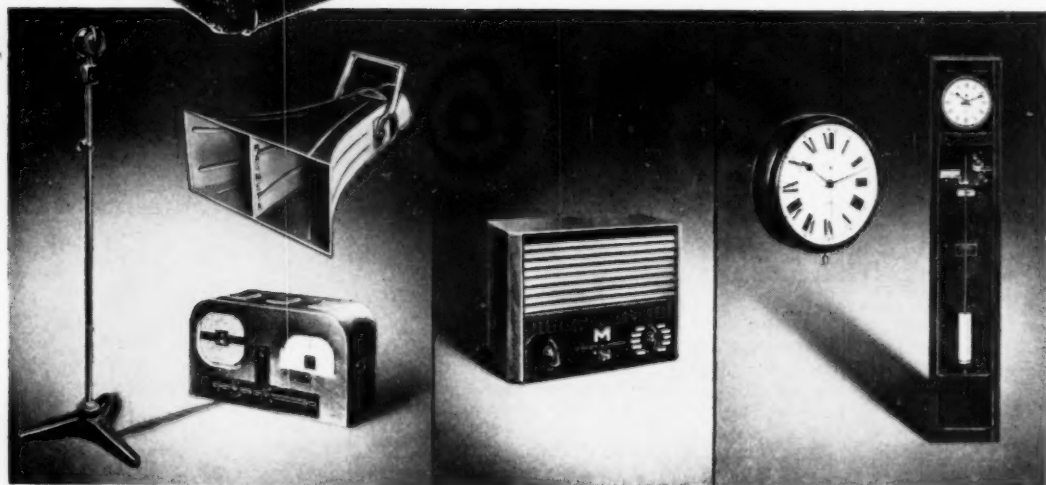
on Stand No. 30
MAIN HALL



THE IMPROVED MI6 TIME RECORDER

Other Exhibits Include :

Public Address Equipment
Office Speakerphone Systems
Master & Synchronous Clock Systems



THE MAGNETA TIME COMPANY LTD

GOBLIN WORKS · LEATHERHEAD · SURREY

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Telephone: - - - HOLborn 9762



SECTION SIX

PROGRESS REPORT

Controlling and Planning Equipment

CONTROLLING and planning may be considered as the internal book-keeping of the factory, as opposed to the external book-keeping of the office. It is certainly no less important that management should at any and every minute know what is happening inside their works than that they should know what is happening in relation to outside concerns. Unfortunately, there are still many firms who fail to recognize this.

The equipment available for this internal book-keeping differs

divergence from planned routine, and take immediate steps to remedy it; and

(4) analysing the cumulative effect of this mass of information in any form that management may require, either as a routine or on specific occasions.

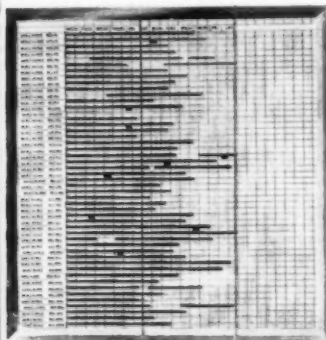
The major factor in production flow is time—hence the time recorder. This instrument has always given an accurate check on the attendance of personnel, and consequently a foolproof basis for relating payment to time spent at work. In recent years, it has been more and more used to determine not only total time worked, but time taken on specific jobs. In this way, the time recorder can provide the basis for advance planning. If, in the past, a job has taken so many minutes, an identical job may, in future, be expected to take something like the same time. Even if the job differs slightly, a better estimate can be



The IBM Superelectric time recorder.

obtained by adjusting a previous figure, rather than snatching an estimated time from the air. In short, the time recorder can be used as a rough and ready time study machine.

In recent years, more work has been put on to time recorders; they have, for instance, been integrated with intercommunication systems so as to give time signals for stopping and starting work, for instance, throughout the factory.



The Banda Planflex adjustable chart.

little in function from normal office machinery, though its appearance and operation are naturally adjusted to the special requirements it fulfils. The first function of such equipment is to maintain factory discipline. The second is to secure a steady and even flow of work under all conditions; it achieves this by

(1) planning how each order shall be executed, and preparing a detailed specification of each operation;

(2) issuing extracts of this specification to the individuals concerned, in the form of job cards, requisition slips, etc.;

(3) maintaining a graphic picture of current conditions throughout the factory, so that the management can see at a glance any

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 89

ADDRESSALL MACHINE CO. (61)
ADDRESSOGRAPH-MULTIGRAPH LTD. (63)

ADREMA LTD. (26 & 34)
ART METAL CONSTRUCTION CO. (85)

BLOCK & ANDERSON LTD. (2)
CARTER-PARRATT LTD. (15 & 17)
CAVE, C. W. & CO. LTD. (55)
EGRY LTD. (49)

FORD, FRANK R., LTD. (35)
GLEDHILL BROOK TIME RECORDERS LTD. (56)

HAYWARD CO. (ADDRESSING MACHINES) LTD. (81 & 82)

IBM UNITED KINGDOM LTD. (51)
JONES, PERCY, (TWINLOCK) LTD. (38 & 44)

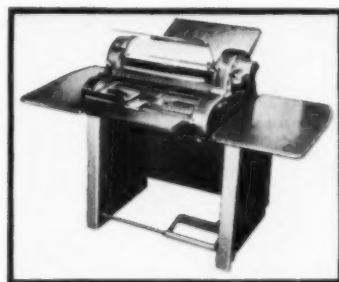
KALAMAZOO LTD. (27 & 33)
LAMSON PARAGON SUPPLY CO. LTD. (40)

MAGNETA TIME CO. LTD. (30)
MANIFOLDIA LTD. (11 & 20)
MOORE'S MODERN METHODS LTD. (6)

NATIONAL LOOSE LEAF CO. LTD. (18)
REMINGTON RAND LTD. (73 & 93)

RONCO LTD. (32)
SHANNON LTD., THE. (74)
STANDARD OFFICE SUPPLIES CO. (78)

TELEPHONE RENTALS LTD. (52)
TRADELOOSE LEAF CO. LTD. (59)



The new Banda systems machine.

Specialist recorders have been devised. The watchman's clock, to secure efficient patrolling, is a case in point.

TO secure full machine utilization, an advance production schedule is necessary. The simplest way to secure this is to work out a complete specification for each new order received, and, on the basis of estimated production times, to prepare schedules for each department or each machine. A reproduction of part of the specification is then given at the appropriate time to the machine minder, and to ancillary depart-



PROGRESS REPORT
CONTROLLING AND
PLANNING EQUIPMENT

ments, such as material and tool stores.

To reproduce the whole specification for each worker would waste time, labour and paper. All that any one man needs is the main heading, with perhaps two or three lines of the body of the specification. Partial duplication can be obtained by using addressing machines, single-line spirit duplicators, or punched cards.

With addressing machines, plates are prepared on the basis of one for the heading and one for each section of the specification. These are used together to list the specification. Then job cards and requisition slips are all printed with the heading, and the one appropriate section.

With spirit duplicators, the specification is prepared as a complete master, but all cards and slips are printed with the heading only, each item or line in the body being "picked off" separately on to the appropriate card or slip to complete the job. Machines specially

designed for this purpose include the *Banda* on stand 2 and the *Multiliner* on stand 35.

With punched cards, pre-punched and interpreted cards take the place of addressing plates or spirit masters. One ingenious machine, the *Ticketograph* on stands 73 and 93, uses type to print all the orders required for one job at the same time.

Once a production schedule has been established, management must see that it is maintained. Constant checking of documents wastes time, since the controller is not interested in the bulk of orders that are running to schedule. The best way to highlight the odd orders that are lagging is by means of a chart or graph, on which the eye can pass rapidly over routine entries.

Several firms have produced wall charts, consisting of movable signals that can be shifted at will on a permanent background. Some of these signals are holders, into which can be inserted typed or written labels giving information on dates, names, code numbers, etc. Others consist merely of coloured symbols of different shapes and colours, whose meaning



The Fordigraph Multiliner machine can be identified at a glance. These symbols can be placed in various ways. One system uses metal tabs inserted into holes on the backboard. Another uses beads that slide along rods. Another uses coloured tapes, the ends of which are anchored in position by a pin. Another uses a larger board consisting of pockets into which are inserted the appropriate job cards.

IBM

INTERNATIONAL TIME RECORDING CO. LTD.

has changed its name to

IBM UNITED KINGDOM LTD.

as this title is more representative of the expansion of its business which now includes a wide range of

INTERNATIONAL BUSINESS MACHINES

such as

Electric Accounting Machines

Electric Typewriters

as well as

Time Recording, Time Indicating and Time Signalling
Equipment and Ticketographs

IBM UNITED KINGDOM LTD.

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Showrooms: 8, Berkeley Square London, W.1., (Mayfair 2334), and at Birmingham, Manchester, Leeds and Glasgow.

IBM

Your Time Clock is Useless . . .

- ★ 'Clocking on' increases Production and saves Money
—countless firms, big and small, have proved that to the hilt.
- ★ Time Clocks are scrupulously fair to both parties
—Management and Men.

But . . .

your Time Clock is useless to you unless it is both
Reliable and also **Accurate**

If . . .

your employees clock on

THE BLICK WAY



you will ensure the highest standards of accuracy and reliability at the lowest cost. In actual fact a Blick Time Recorder costs **a great deal less than nothing**, because it makes and saves you far more money than it costs. Write to-day for full particulars to :

BLICK TIME RECORDERS LTD.

2 BLICK HOUSE, 188/190 GRAY'S INN ROAD, LONDON, W.C.1.

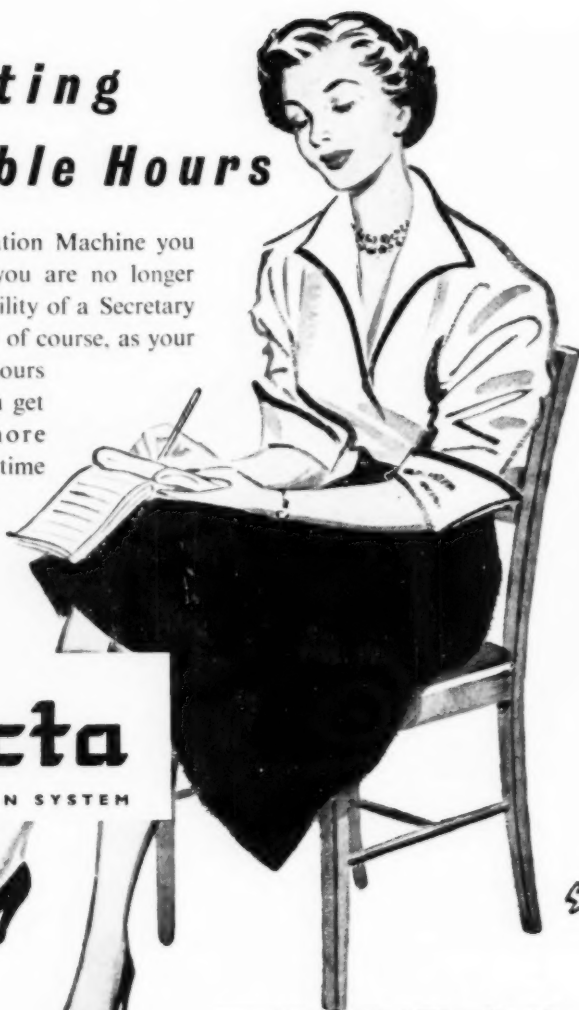
TERminus 2722 (3 lines)

Also for: Watchmen's Clocks, Master Clock and Staff Locating Systems (See Page 16).

Branches at Birmingham, Cardiff, Leeds, Manchester, Newcastle and Nottingham.

Stop Wasting Her Valuable Hours

With the "Emidicta" Dictation Machine you can dictate immediately — you are no longer dependent upon the availability of a Secretary or a Shorthand-Typist. And of course, as your Secretary need not spend hours taking down shorthand, you get correspondence back more promptly, and she gets more time to be an efficient Secretary. *In fact the "Emidicta" makes office life easier and more productive all round.*



The
Emidicta
ELECTRONIC DICTATION SYSTEM



SEE THE EMIDICTA
AT THE
BUSINESS EFFICIENCY EXHIBITION
BIRMINGHAM — STAND No. 54

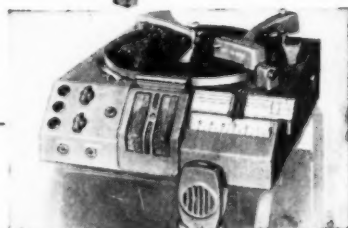
OR SEND FOR DETAILS TO:—

E.M.I. SALES & SERVICE LTD.

Emidicta Division, (Dept. 4)

363/367, Oxford Street, London, W.1.

Telephone: Mayfair 8597, Grosvenor 7127/8.



NOTE

The EMIDICTA is made by E.M.I. (*His Master's Voice, Marconiphone, Columbia, etc.*) masters of the art of recording and sound reproduction.

E.M. 31



SECTION SEVEN

PROGRESS REPORT

Dictating and Recording Machines.

WHEN Thomas Edison invented the phonograph, he was trying to help the businessman. Instead of laboriously writing or typing out correspondence, the businessman of the future—so Edison imagined—would merely dictate on to a record that could be sent to the correspondent, who would play it back on his own instrument. All writing would be eliminated.

The development of the phono-

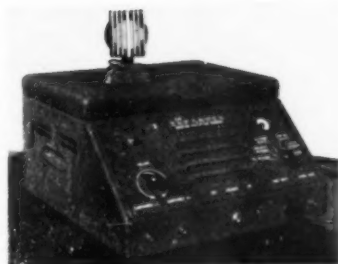


Above, the new Expandex recorder.

Left, the Tape-riter recording machine.

graph got sidetracked into the entertainment world. In the office, letters continued to be written. Expanding use of the typewriter brought a feminine invasion of the office, and the invention of shorthand meant that the burden of correspondence was shifted from the shoulders of the executive to those of the typist. Shorthand-typing is an expensive method of correspondence, however, since the typist spends only half her time at her machine—and idle machine-hours cost money.

Thus the wax cylinder phonograph was developed to secure the fullest possible use of typists and typewriters. But, while these served their purpose, they had their drawbacks. The wax cylinders were too heavy and bulky for inter-office transport and, moreover, had to be handled with care. If a mistake were made in dictat-



ing, it could not be erased. Reproduction qualities were not exceptionally good. And, since the cylinder had to be shaved before re-use, its physical life was limited.

During the last war, however, research work in electronics brought the magnetic recorder, with which the spoken word could be recorded on any suitably treated surface and subsequently reproduced with remarkable fidelity by

purely electrical means, without physical contact. Initial development of the magnetic recorder was in the field of telecommunications, and it was not until after the war that it reached the office. In the last three years, however, development has been extremely rapid, and there are now over 30 different models on the market, with new ones still arriving. Two examples being shown for the first time at Birmingham are the *Expandex* on stand 12 and the *Dimacon* on stand 65.

The technical performance of all these machines is uniformly high, the main variation between them lying in the amount of speech that they can record and the medium they use for recording it.

The first of these machines to reach the market, the *Recordon*, uses a paper disc as the medium, and this can contain three minutes' dictation—sufficient for the great bulk of correspondence. The *Emidicta*, on stand 54, which also uses a paper disc, takes up to six minutes' dictation. Other models use plastic belts, paper or plastic tapes, and metal wire or bands; one recent machine, the *Dictorel* (not being shown at Birmingham) uses a simple sheet of foolscap paper. Dictating times, too, can now be obtained running from the original three minutes up to as much as an hour. This enables the machines to be used not merely for correspondence but for the recording of lengthy memoranda and for the proceedings of meetings and conferences. Two years ago, *BUSINESS* used one of the first wire recorders to record a "Brains Trust" that lasted for over three hours.

THE coming of the magnetic recorder is revolutionizing the modern office. It has completely superseded the wax cylinder: more dictation can be made and stored per square inch of recording medium. The record is lighter, takes up less room, and can be easily and safely transported. Paper and plastic media, for instance, may be sent through the post without protection in an ordinary envelope. The quality of reproduction is equivalent to that obtainable on a wireless set, and volume can be adjusted at will; either loudspeaker or earphones can be used. Errors in dictation

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69.

DICTAPHONE CO. LTD. (60)
E.M.I. SALES & SERVICE LTD. (54)
EXPANDEX VISIBLE FILING CO.
LTD. (12)
LONDON OFFICE MACHINES LTD.
(31)
OFFICE MACHINERY LTD. (64)
ROYAL TYPEWRITERS. (65)



PROGRESS REPORT

DICTATING & RECORDING MACHINES.

can be corrected or "second thoughts" inserted by merely reversing the machine until the error is reached and then dictating the correct version on top of the old, which is simultaneously erased. Recording media can be used again and again without preparation, since each new use automatically erases the previous recording. The life of the medium is determined solely by the wear and tear of the material from which it is made.

The full impact of these machines has yet to be felt; we are still in a period of experiment, and of trial and error. Initially, they were used solely as a substitute for the wax cylinder machine. That phase is now passing, as the advantages of the new machines are being grasped.

How this development is taking place may be gathered from the experience of one large concern. Their salesmen call on retailers and book orders for a very wide range of products manufactured by the company. These orders, when re-

ceived by head office, must be divided according to product group among eight sales departments. Originally, each salesman sent in a written report each day, which was transcribed and dissected by a bevy of typists. Then the firm bought each salesman a portable recording machine which he carried in his car; he dictated orders into it as he received them, and, at the end of the day, merely posted the paper discs on which the recording was made to head office, where they were transcribed and dissected. The salesmen were thus relieved of paper work, though the burden at head office remained. This problem was then tackled by the appointment of an "editor," whose job it was to listen to all the recordings received, and compile from them the eight dissected reports. Transcription was thus eliminated. Now the final stage has been reached; the "editor" dictates his eight reports on to paper tape, and from these the typists complete, without any transcription, the various documents necessary for seeing that the order is carried out. Thus, within the confines of one firm, Edison's dream has been largely realized.



The Dictaphone Time-Master.

The extension of this development to inter-firm correspondence will obviously have to await a greater degree of standardization in the recording media employed; this should not, however, be impossible to obtain.

A recent development of considerable interest is the linking of magnetic recorders to intercommunication equipment. This gives two advantages. In the first place, recorders can be used on the central typing pool basis. In the second, telephone messages, either between executives in the same office, or between executives and outside contacts, can be recorded and stored.

Leading British Industrial and Commercial undertakings have already installed the— **DICTOREL**

The Reliable
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AND HERE ARE SOME OF THE REASONS

Customers' Report

The machine is so simple to operate and we prefer the sheet of paper as the recording medium.

Our typists are so keen about the quality of reproduction and the easy reference back or forward to any desired point in the dictation.

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WE GET 100% RELIABILITY

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There are no confusing knob or switch controls and you can feed the sheet of paper in faster than your note-heading into a typewriter.

No other machine possesses the instantaneous playback and pin-point index reference back or forward.

One dictogram sheet can be used and re-used indefinitely. Erasure is automatic with each fresh recording.

All our users will readily substantiate this claim.

with the DICTOREL Magnetic Dictating Unit.

Write, call or phone for a demonstration.

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SLOane 6198/9

BUSINESS



The REX Recorder

The Rex Recorder utilises the most up-to-date and efficient recording medium—a plastic electronic disc. This gives twelve minutes continuous recording, can be erased instantaneously (magnetically) and can be used almost indefinitely.

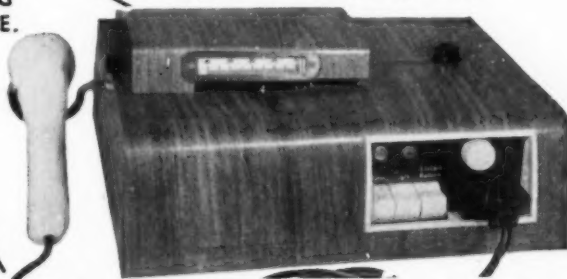
- ★ Extremely easy and speedy operation; push-button controls.
- ★ Dual-purpose model—for recording and reproducing.
- ★ Featherweight hand-microphone and headphone.
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Electronic Disc
Recorders

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This arrangement doubles the number of files in the same floor space, avoids opening drawers, exposes all titles to view at the same time, speeds up reference and reduces the cost of filing equipment.

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HOW MUCH DID WE USE LAST YEAR?

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POSTINDEX Visible Record Systems provide the means of instant and accurate control of all the essential facts you need—of stocks, sales, purchases, accounts, costs—in fact, of **all** those vital points upon which effective control is based.

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SECTION EIGHT

PROGRESS REPORT

Furniture and Seating

PROGRESS in the development of office furniture has been much slower than in that of office machinery. There are, of course, cogent reasons for this. In the first place, sheet steel and (until very recently) timber have been extremely scarce for years, so that manufacturers of office furniture have been unable to obtain sufficient materials to meet the demands of customers. Nor is the position likely to improve, at least as far as steel is concerned. The February allocations of steel to manufacturers have shocked even the pessimists. They will certainly cover only a small fraction of the demand this year for new

desk, for instance, is that it should offer a suitable flat surface of durable material at a suitable height, together (in some circumstances) with a certain volume of temporary storage space. A kitchen table will—as many a firm found during the war—perform this function quite adequately. The only salient reason for using the more conventional types of office desk is that they offer a more attractive appearance.

This is not, of course, meant to belittle the importance of appearance. Efficiency in the office depends very largely on good morale among the staff, and the morale of the clerk—and even the office manager—who is satisfied that his equipment is both efficient and attractive is infinitely higher than that of the man or woman who feels that their environment is



The Tan-sad V2 principal's chair.

merely adequate. The additional capital invested in attractive office furniture, as opposed to kitchen tables, is an investment that will yield real dividends.

The point is that, in an age when ornament in general is at a discount, ideas of what constitutes an attractive appearance in the office change relatively slowly. The furniture that was considered attractive ten years ago, when it was first designed, is still considered attractive, and there is thus no need to change it essentially. On the contrary, the economics of production offer every incentive to standardize designs on a long-term basis, and the last few years have shown a considerable trend towards the standardization of office furniture.

After a considerable amount of research, for instance, the Ministry of Works has designed a series of office desks and other furniture that is being manufactured in standard sizes and designs and installed throughout the many new Government offices that have been completed since the war. This standard furniture is also being used for replacements in older offices as and when existing furniture becomes obsolescent, so that in course of time all Government offices will be equipped with the standard range.

A number of large business concerns, such as Shell-Mex and B.P. Ltd., have followed the same policy, and have had their office desks and other furniture designed to a standard pattern, either by their own experts or by an outside firm of consultants, working in collaboration with an established firm of office furniture manufacturers. Even the



The new Abbott reception desk.

steel office furniture. Under these circumstances, manufacturers can hardly be blamed for keeping their blueprints of new models rolled up until such time as changed circumstances enable them once again to fulfil the orders they already have on hand for standard models.

There is, however, a more fundamental reason for the comparatively static position in office furniture, both in wood and steel. The function of the various types of office machinery is complex and constantly changing. Existing machines must be modified and new machines designed to correlate changing demands with advances in engineering techniques.

But the function of office furniture is essentially simple and straightforward: it has not changed significantly since the days of Chippendale and Hepplewhite. All that is required of a

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

- ABBOTT BROS. (SOUTHALL). (41)
- ADDRESSOGRAPH-MULTIGRAPH LTD. (63)
- ART METAL CONSTRUCTION CO. ASTON CABINET CO. LTD. (48) (85)
- BELL BARN LTD. (3)
- BLOCK & ANDERSON LTD. (2)
- CAVE, C. W., & CO. LTD. (55)
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- CONSTRUCTORS LTD. (77)
- EVERTAUT LTD. (14)
- FORD, FRANK R., LTD. (35)
- HAYWARD CO. (ADDRESSING MACHINES) LTD. (81 & 82)
- KALAMAZOO LTD. (27 & 33)
- MANIFOLDIA LTD. (11 & 20)
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- REMINGTON RAND LTD. (73 & 93)
- RONEO LTD. (32)
- SHANNON LTD., THE. (74)
- STOLZENBERG PATENT FILING CO. LTD. (67)
- TAN-SAD CHAIR CO. (1931), LTD. (7)

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Du-al office seating is scientifically designed to minimise fatigue of sedentary staff. Du-al Chairs will repay their cost over and over again in increased staff efficiency.



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I.C. 121. Super De-Luxe Executive Armchair. Revolving, with automatic sliding seat and pivoting backrest. Self-adjusting to correct height. Wide arm-rests with sponge interior



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PROGRESS REPORT

FURNITURE & SEATING

smaller offices have felt the impact of standardization, though often without knowing it, through the British Standards Specification for office desks that has now been adopted by many firms in the industry.

A recent development in the United States has been the evolution of "modular" office furniture, in which desks, cabinets, shelves, cupboards, etc., are designed of the same material in dimensions which are multiples of the "module." These units can thus be fitted together in a variety of ways to form a single large piece of equipment that will include all the various units needed in the office. This development has not yet reached this country so far as timber is concerned, though in steel some firms, notably Roneo, Ltd., have been making unit office furniture for some years.

At the same time, while standard equipment will meet the needs of the rank and file of the office, there remain certain specialist clerks, whose work, for the most part, is tied to certain specific machines. For them special pull-outs, cupboards and depressions in appropriate desks have been designed to accommodate the machines.

THE office worker spends most of his time sitting, but even so is subject to his own special form of fatigue. This fatigue can be very considerably reduced by the use of correctly-designed seats, and the so-called "posture" chair has become the standard unit in all progressive offices.

Adjustable seat height and pivoting back rest are now standard features of such chairs, the height adjustment being carried out simply and rapidly by the user himself.

The executive, being normally older and, therefore, more susceptible to fatigue than his junior, is catered for by posture chairs that, in addition to the standard advantages, also give him the extra comfort of upholstery on back and arms.



One of the Roneo U series of desks.

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The JUNIOR EXECUTIVE DESK



IN FIGURED OAK

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munication. You can have the "Soundmaster" on very reasonable rental terms, which include full maintenance.

The "Soundmaster" is only one of a range of products offered by Communication System, Ltd., to increase the efficiency of business organizations. They also install Public Address Equipment, Private Automatic Telephone Exchanges, and Push-Button Intercom Telephones. Ask your secretary to write for full details today.



COMMUNICATION SYSTEMS LIMITED

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SECTION NINE

PROGRESS REPORT

Intercommunication Equipment

THE NEED to-day is to save wasted man-hours. Intercommunication equipment serves this purpose in two ways. On the one hand, it rapidly locates "missing" executives when they are needed, and thus enables urgent matters to be dealt with expeditiously. On the other, it saves many hours each week that might otherwise be used by office staff in dictating, transmitting and transcribing written messages.

Intercommunication equipment is of two types—the push-button type and the automatic exchange type. In the normal push-button type, a single multi-core cable is connected to every instrument, so that the size of the installation is limited by the maximum thickness of cable which is economically practicable. Few push-button systems can accommodate more than 31 stations. They are thus most suitable for smaller concerns. Firms requiring installations of

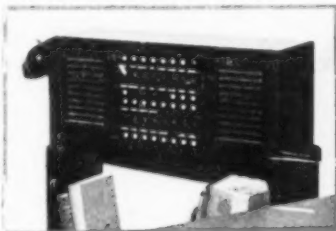
still available, but to-day there is no need to limit the system to a single loudspeaker master. With two or more master stations, the masters have priority and secrecy.

AN EVEN more important development is "loud-to-loud" speech, an important technical achievement which has made it possible to talk and listen simultaneously. Formerly, the person talking had to depress a key to operate a speak-listen control. With the latest "loud-to-loud" control, the switching is electronically controlled, enabling both parties to converse as freely as if they were in the same room.

hands free and permitting unrestricted movement.

The use of such a system is of particular value in the factory, since a speaker may be as much as 30 feet away from the instrument. A machinist may thus answer a query without leaving his machine; an article in the August, 1951, issue of *BUSINESS* described how one firm was using a system of this type for routine progress chasing.

The fact that any number of masters (or even sub-stations) can be switched into a circuit at once means that an executive can hold



A Dictograph master station

a conference at a moment's notice without anyone leaving his desk or bench—a tremendous economy of time.

IN THE larger concern, where more than 30 lines are required, the only alternative is an automatic exchange, in which two wires from each instrument are linked to a central switchboard. There is no limit to the size of such a system, and as few as 10 lines can be connected together. Normally, private exchange equipment comes in units of 10, 25, 50 and 100 lines and upwards. The system is operated in the same manner as the public automatic telephone system, each instrument having a number, so that the caller dials the number of the instrument of the man to whom he wishes to speak. One system combines the advantages of push-button and automatic exchange by providing the managing director with a master station equipped with both buttons and dial. He can thus contact half a dozen or so of his most important executives at the touch of a button, and only has to dial to get into touch with less frequently desired calls.

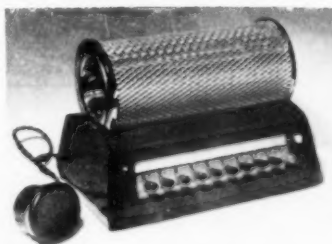
There is an increasing trend to regard the provision of these intercommunication systems not



The Magneta Speakerphone

only three to four instruments can obtain a battery-operated unit with negligible current costs, though in larger units it is more usual to use a mains-operated system.

Early models of push-button apparatus consisted of a master set with a loudspeaker and sub-stations equipped with hand microphone similar to the standard G.P.O. telephone. Such sets are



The Soundmaster intercom.

The use of one hand while telephoning imposes limitations on movement about the office, so that reference to files, for example, can only be made by interrupting the conversation. Loudspeaking telephones have overcome this limitation, leaving both the speaker's

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

- COMMUNICATION SYSTEMS LTD. (78)
- DICTOGRAPH TELEPHONES LTD. (74 & 36)
- HADLEY SOUND EQUIPMENTS. (70)
- MODERN TELEPHONES (GT. BRITAIN LTD. (57)
- NATIONAL CASH REGISTER CO. LTD. (75 & 89)
- RELIANCE TELEPHONE CO. LTD. (80)
- TELEPHONE RENTALS LTD. (52)



PROGRESS REPORT INTERCOMMUNICATION EQUIPMENT

merely as a method for permitting executives to contact each other, but as a means whereby the management can control, automatically or at discretion, many activities of the factory or office. The simplest example is the linking of signal lights on an office door to indicate that the occupant of the office is engaged.

Many more complicated facilities can be provided, however, such as the incorporation of a fire-alarm service, if desired. Officials can be summoned immediately from any part of a large building or series of buildings by visual or audible signals.

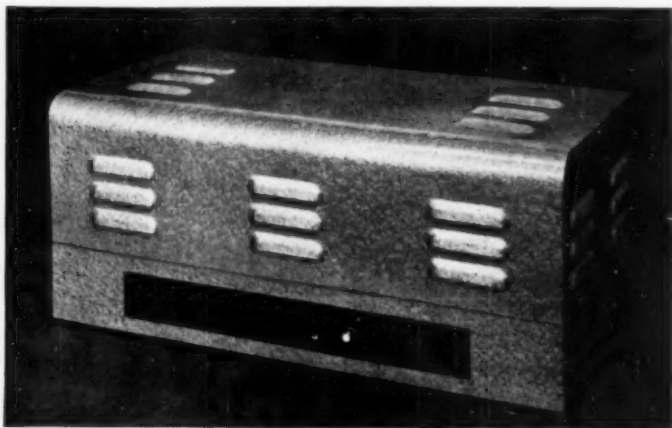
Time control can be incorporated with the intercommunication system, which, with a playing and amplifying system, can be made to transmit signals for starting and stopping work, etc., to the whole factory or to any part or parts of it. Time signals or an executive's facilities can be given priority over the entire system. A wireless receiver and record

player incorporated in the system can provide "Music While You Work," which can be switched on and off at predetermined intervals. A new device, to be seen for the first time, will give this wireless reception on a coin-in-the-slot basis.

Another recent development has been the linking of a standard communication system with one or more wire or tape recorders. An

executive who wishes to dictate a letter or document merely lifts the hand set of the normal telephone system, dials a number, and is automatically connected to the recorder.

When he has finished dictating he replaces the receiver, the wire or tape rewinds and a light flashes on to indicate to the typist that a message is awaiting transcription.



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for staff location, time signals, works relations, announcements and music.

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for making man-hours more productive.

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M-P 47

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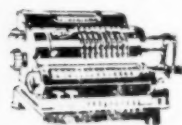


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ROTARY CALCULATORS ALL MAKES For all calculations. Multiply, divide, add and subtract in 1/10th time taken to do so mentally.



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All models price Six guineas

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74 CHANCERY LANE (Holborn End) LONDON W.C.2 and at Maidenhead



PROGRESS REPORT

Office Sundries and Supplies

TO compile a report on progress in office supplies and sundries, covering everything from carbon paper to copyholders and from drawing pins to door stoppers, is obviously an impossibility. All that can be done is to highlight a few of the more recent developments in various fields that readers may hope to see at Birmingham.

EFFICIENT personal planning is essential if the top executive is to do his job. For this, a good diary is a must. One such is the well-known *System* desk diary on stand 85. A loose-leaf desk diary, it gives in a compact area a large writing area for each day, with three months' calendar. It is mounted on a strong stand,



The Shaw's Week-to-View Diary.

and refills are available each year. The *Shaw's Week-to-View* diary gives the same information in volume form, with wire or book-form binding. Finally, for the executive who must plan well ahead not only his own activities, but those of his subordinates, there is a wall chart covering a whole year.

THE growth of spirit duplication has led to an increased demand for hectographic carbons. The manufacturers of spirit duplicators all manufacture carbon

papers; so do a number of firms specializing in carbons. One such has now produced a series of *Stainless* carbons, which, it is claimed, provide a new approach to the problem of dirty hecto carbons. In these, the hecto-colour is applied to the tissue, and then overcoated with a second surface film which eliminates the risk of soiling during handling. When the master is made, the surface film combines with the carbon coating proper to give the normal master copy. Thus cleanliness is gained without loss of efficiency.

The new carbons come in four grades: for medium long runs, for short runs, for average runs, and for longer runs. Purple and red are available in all grades, and red, green and black for long runs.

IN most offices there are some periodical publications that are kept for constant reference. Most weekly publications, Government orders, and the like, tend to be thin and "wanky," with a staple binding. The storage of



The new Moore binder.

these until they can be bound is something of a problem.

A new solution, to be seen on stand 6, is an ingenious binder that utilizes the staples that are already in the publication. Two thin springy steel tapes fixed to the front of the binder are pushed through the staples and then into a pocket in the rear of the binder. This gives an extremely simple, but firm, binding, without in any way damaging the material bound.

REFERENCE has already been made to the problem of stains incurred in handling hectographic carbons and hectographic ink. Anyone who has been unfortunate enough to get his hands stained in this manner will realize the difficulty of getting the stain off; ordinary soap and water are almost powerless.

A new stain remover, *Kope*, on stand 78, will rapidly and successfully remove even the appalling mess shown in the picture. The spirit-like liquid is poured on to the hands, rubbed lightly in, and then washed off under the tap, taking the stains with it.

continued on page 110



A new hand cleaner.

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

- ADREMA LTD. (26 & 34)
- BLOCK & ANDERSON LTD. (2)
- BURROUGHS ADDING MACHINE LTD. 4, & 90
- BUSINESS PUBLICATIONS LTD. (85)
- COLUMBIA RIBBON & CARBON MFG. CO. LTD. (10)
- ELLAMS DUPLICATOR CO. LTD. (16)
- FORD FRANK R. LTD. (35)
- MOORE'S MODERN METHODS LTD. (6)
- OFREX LTD. (84)
- REMINGTON RAND LTD. (73 & 93)
- ONEO LTD. (32)
- ROTAPRINT (KAYE'S) AGENCY LTD. (5)
- ROYAL TYPEWRITERS. (65)
- SHANNON LTD. THE. (74)
- STANDARD OFFICE SUPPLIES CO. (78)
- STOLZENBERG PATENT FILE CO. LTD. (69)
- UNDERWOOD ELLIOTT FISHER LTD. (37)
- UNIVERSAL POSTAL FRANKERS LTD. (76)



PROGRESS REPORT

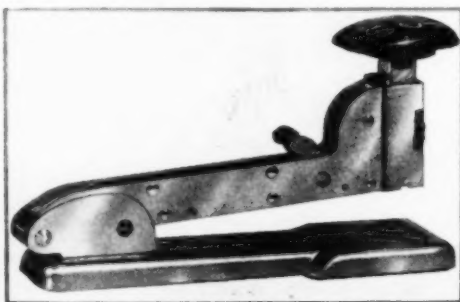
OFFICE SUNDRIES AND
SUPPLIES.

THE varieties of stapling machines now available cover practically every imaginable need, from the small instrument, somewhat like a fountain-pen, that can be clipped into a waistcoat pocket, up to the mammoth models, operated by foot treadle or electric motor, and capable of binding many sheets of paper together at rapid speeds. New models have not been announced, but a redesigned version of the

well-known *Samson* may be seen on stand 84.

A NEW guard book, on stand 69, is designed to act as a reminder system. One form consists of 43 heavy Manila pockets, 12 step-tabbed for the months of the year and 31 for the days of the month; another form has 24 similar pockets, step-tabbed alphabetically from A to Z.

Note pad memos, letters and other documents can be forward filed in the former model to be dealt with on the date on which they become due.



The re-designed
Samson stapler.

ADDRESSING AND MAILING EQUIPMENT

continued from page 80

MAILING equipment is of two types, dealing with incoming and outgoing mail respectively.

Ideally, incoming mail should be so addressed that the unopened envelope can be delivered to the proper recipient. This is not always possible, and policy may demand that all letters be opened centrally. In such circumstances time-saving becomes essential, and a mechanical letter opener is of great assistance in this direction. It has the added advantage, in these days of scarce and costly stationery, of simplifying the task of collecting and re-using envelopes.

So far as outgoing post is concerned, the provision of machinery for folding and inserting letters into envelopes will only interest very large postal departments, but a simple sealing device is comparatively inexpensive and a useful adjunct even in a small office.

Postal franking machines, such as those on stands 76 and 91, are becoming increasingly popular even with the smaller office.

Catesbys LINOLEUM and CORBULIN

The contracts listed suggest the wide variety of Floor-covering work and exemplify the craftsmanship attained by CATESBYS LINOLEUM CONTRACT DIVISION. They include canteens, hospitals, schools, factories, offices, churches, power stations, banks, universities, etc.

As the life and efficiency of Catesbys Linoleum and Corbulin depends upon proper fitting, it is important to get the craftsmen best suited for the job. We have a long established specialist staff of highly skilled fitters who know precisely what is needed when floors and floorings are in question. It is their job to know how to get greatest efficiency with the saving of material.

The use of Corbulin—the damp-proof floor covering, in various colours and thicknesses—has played a big part in bringing old and new concrete surfaces into use with a minimum of delay and the maximum of comfort and efficiency.

We invite your enquiries to our Linoleum Contract Division:

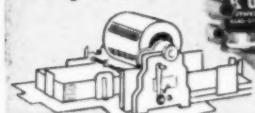
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King's College Hospital
Allen and Hanbury
All Souls Church
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Stourport Power Station
Redhill Hospital
Bank of New South Wales
Car Mart Ltd.
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TWO 'STANDARD' PRODUCTS

Typists
and
Operators
of
Duplicating
Machines
say ...



KOPE is wonderful for
Removing Stains from Hands

Retail Price per Bottle:

20 oz. 10/-

8 oz. 5/-

4 oz. 3/-

TAX FREE

Methyl Violet or Similar
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and soft.

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BLADE:—Finest Quality Self-sharpening
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GUIDE:—Adjustable for cutting any size
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The NEW
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LOUD SPEAKER
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★ A low-priced recorder that
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Here's the chair for the man at
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EARLY DELIVERY

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LEABANK WORKCHAIR

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A Beautiful
Picture
is said by the
Chinese to
be worth
10,000 words.

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Let us demonstrate to you on your own work, how the PLUS can benefit you.

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VARI-TYPER

THE OFFICE COMPOSING MACHINE

SAVES TIME AND MONEY

HERE is a composing machine which justifies lines automatically, has instantly interchangeable type founts, makes perfect "masters" irrespective of the operator's touch—yet works as easily as an ordinary typewriter.

SEVERAL hundred different type faces are available, ranging in size from 6-point to 18-point, including italics. There are also complete founts for foreign languages, mathematics, chemistry and other special symbols—each one fitted at a twist of the wrist.

WHATEVER your method—stencil, direct plate, photo-litho—the Vari-Typer, used in conjunction with your stencil or offset duplicator, will effect a substantial reduction in your printing costs—quite apart from the saving of time and composing charges normally involved.

Vari-Typer

VARI-TYPER DISTRIBUTORS (Gt. Britain) LTD.

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You may think you are right— **but have you proved it?**

If your business uses duplicating, you are probably convinced that you know which duplicator will give you the best service—but have you *proved* that your conviction is right?

Roneo believe that the only way to arrive at a true answer is to have a comparative test of all duplicators—including, of course, Roneo '500'.

We know that a side by side test will prove beyond doubt the great advantages of Roneo '500'.

- Considerable saving in running costs.
- Really automatic inking, giving continuously even work without stopping to re-ink.
- Interleaving, with blotting or other paper to prevent smudging, is unnecessary.
- No proofing. The very first copy is usable.
- 16,000 copies from a lb. of ink.
- Quick clean colour change in 25 seconds.
- Better standard of work with greater speed.



Write for booklet "Let's
take a back seat",
which gives users'
reports on
Roneo '500'
that may
help you
to economise.



RONEO "500"

SERIES II

TWO MODELS: FOOLSCAP AND THE WIDE POLICY (PRINTS ON PAPER 18" x 14")

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PROGRESS REPORT

Printing, Copying and Duplicating Equipment

THE copying process is not merely laborious; it is suspect. A copy can never be more accurate than the original; if it is written out, it may only too often be less so.

An office must have authentic copies of letters and other documents it sends out. There are many ways of securing such copies, all giving high quality copies, and the decision as to which methods to use must rest on the comparative economies of the question.



The new Copyfix copying machine

For a few copies the well-tried method is, of course, to use carbon paper. But even the most modern electric typewriter can only give 20 copies, while the manually-operated machine is limited to less than half that number.

A traditional method for securing a larger number of copies was the hectographic process with its gelatine tray. The tray is now obsolete, but the principle behind the process has recently been successfully revived in the spirit duplicator. This uses a paper master as the copying medium; the material to be copied is drawn, written or typed, mirror-fashion, on the back by resting the master on a hectographic carbon, face upward. The effect is the same as that obtained when a carbon is inadvertently put wrong way round when typing with a carbon copy. The master carries its own ink, so that it can be used repeatedly, and subsequent additions or correc-

tions may be faithfully duplicated on to further copies, provided the supply of ink holds out.

In order to pick up ink from the master, each sheet of paper is moistened with spirit; hence the name, spirit duplicator. The number of copies which can be taken is determined by the amount of ink on the master, the amount of moisture taken by each sheet of paper, and the amount of pressure at the point of duplication. Under favourable conditions several hundred clear copies may be taken, and the last will be just as clear as the first. Machines taking up to foolscap size may be seen on stands 2 and 35, and brief size machines are also available. Parts of a master may be conveniently masked by clipping a sheet of paper in position on the master, or another master, with different information, may be clipped in place of the plain paper. A great degree of flexibility is thus obtained.

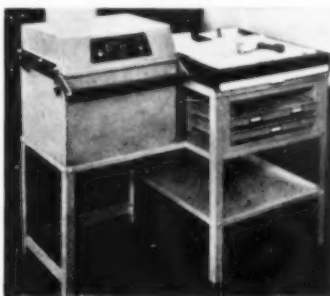
There is no difficulty of wastage when duplicating smaller sheets, and a very fair degree of registration can be obtained. If different



The new Gestetner 180 duplicator

colour hecto carbons are used in the preparation of a master, all these colours will be reproduced simultaneously, though all colours tend to be a little light or faint.

These spirit duplicators fill a gap between the normal limit of carbon papers on the one hand, and the stencil duplicator on the other.



The new Remflex copying machine.

The stencil duplicator has a higher operating cost (a stencil takes more than a master and takes longer to prepare), but can duplicate thousands of copies where a spirit duplicator can only manage hundreds.

THE stencil machine has been well established for many years, and many excellent models are available, some of which may be seen on stands 16, 32, 39 and 43. The process is essentially that of forcing ink through the holes in a stencil on to a more or less absorbent paper, the stencils normally having been cut on a typewriter.

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

ADDRESSOGRAPH-MULTIGRAPH LTD. (63)

ADREMA LTD. (26 & 34)

BLOCK & ANDERSON LTD. (2)

BULMER'S (CALCULATORS) LTD. (47)

BURROUGHS ADDING MACHINE LTD. (42 & 90)

COPYCAT ASSOCIATED (MARKETING) LTD. (46)

DAPAG (1943) LTD. (4)

ELLAMS DUPLICATOR CO. LTD. (16)

FORD, FRANK R., LTD. (35)

GESTETNER LTD. (39 & 43)

HAYWARD CO. (ADDRESSING MACHINES) LTD. (81 & 82)

IBM UNITED KINGDOM LTD. (51)

LAWES RABJOHNS LTD. (19)

OFFICE MACHINERY LTD. (64)

OFREX LTD. (84)

OZALID CO. LTD. (58)

RONEO LTD. (32)

REMINGTON RAND LTD. (73 & 93)

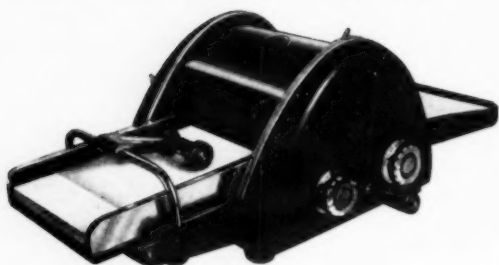
ROTAPRINT (KAYE'S) AGENCY LTD. (5)

UNDERWOOD ELLIOTT FISHER LTD. (37)



THE PELICAN

The Reproducer with Diffusion Damping



SIX MILLION DROPS!

Pelican diffusion damping employs six million microscopically small drops, which are applied with mathematical precision to the paper used. The volume of the drops can be varied according to the size of paper and the number of copies required—a factor which contributes to the high operating efficiency of the Pelican machine.

Moreover, Diffusion damping does not restrict the paper to be used to the hard-sized or super-calendered type since all types and surfaces of paper can be used with equally satisfactory results.

THERE'S ALWAYS ROOM FOR A PELICAN!

- For smooth surfaced paper the supply of spirit is more restricted. A movement of the regulating knob and the correct supply of fluid is automatically adjusted.
- Diffusion damping ensures that too much dye is not taken from the original, thus reducing wear. Even with highly absorbent paper one original is sufficient for numerous copies.
- The automatic paper feed greatly assists the operator. Any size of paper from Foolscap to postcard size is firmly gripped and evenly fed.
- The automatic locking device safeguards the original whilst it is in the machine. By automatically operating when the supply of paper is interrupted, it prevents the pressure roller from damaging the original.
- When small forms or short texts are used the paper can be limited to the length of the text or form, thus conserving spirit.
- The spirit cannot flow after printing, as damping automatically ceases when the cylinder stops turning.

MANUFACTURERS OF CARBON COPY SETS AND FORMS

SOLE CONCESSIONAIRES FOR THE BRITISH ISLES AND THE BRITISH COMMONWEALTH

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PROGRESS REPORT

PRINTING COPYING AND DUPLICATING EQUIPMENT

The limiting factor to the capacity of the process is the wear and tear of the rather delicate wax stencil. A recent development that increases the capacity of this process has been to use the cut stencil as a negative, from which is printed one or more offset litho masters, which are then run off on an offset litho machine. The stencil machine is so highly developed that new models are comparatively rare, but one such, the Gestetner 180, may be seen on stands 39/43.

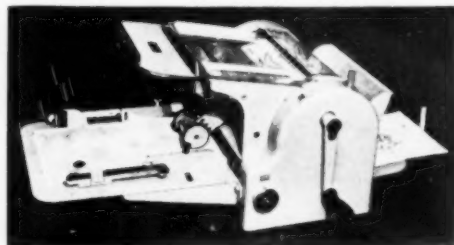
The offset litho duplicator stems from professional printing practice, and is a commercial printing machine scaled down to meet the needs of the office, and designed for use by semi-skilled office workers. With metal master plates, a high degree of perfection may be obtained, and a very large number of copies, with several colours in perfect register, can be obtained. With paper or plastic masters, the first cost is reduced, though the number of copies that can be run off is also less. It can still compete, however, with the best spirit or stencil duplicators in capacity.

Finally, the type-set duplicator is a modification of the commercial letterpress printing machine again scaled down and simplified to meet the needs and capabilities of the average office worker.

Special-purpose printing duplicators, such as that on stand 4, have been developed for printing tickets, tags, etc.

DUPLICATORS so far described satisfactorily tackle the job of producing multiple copies of a document at the point of origin; they can make no contribution to the equally important problem of producing copies of a document received from an outside source. The only efficient way in which this can be achieved is by some method of photo-copying.

Photo-copying has been standard practice in the drawing office for many years, but the documents normally handled are large and the copying equipment necessarily bulky. In the last 12 months strenuous efforts have been made by manufacturers to develop photo-copying apparatus which would handle, rapidly and efficiently, the smaller documents, up to foolscap size, that are normally encountered in the office. It is significant that no fewer than three new models of this type—the Ozarapid on stand 58, the Copyfix on stand 19, and



The Princess spirit duplicator.

WHILST the average office is normally provided with some means of duplicating, much of the equipment is restricted to the reproduction of simple typewritten matter on duplicating papers.

In many offices this limitation often proves an embarrassment, and many are the disappointments following attempts to print something a little more ambitious on a machine not designed for such work.

This is one of the reasons for the increasing numbers of Kaye's Rotaprint machines being installed in modern offices, for the Rotaprint is a dual-purpose machine equally suitable for printing stationery and literature in colour, as it is for duplicating reports, minutes and circulars, with the added advantage that typewritten work is reproduced to perfection.



BUSINESS EFFICIENCY EXHIBITION

Bingley Hall, Birmingham—Feb. 19-29.

Visit our **Stand No. 5.**

KAYE'S
Rotaprint

You are invited to apply without the slightest obligation, for an interesting folder of specimens showing the class of work within the scope of Rotaprint, and a full specification of the machine. Fill in and post this Enquiry Form to-day.

FEBRUARY, 1952

The Modern Office
**PRINTS and
DUPLICATES**
on a
**DUAL PURPOSE
MACHINE**

The small precision-built Rotaprint litho machine takes no more room than the average duplicator, and is just as simple to operate, yet it is possible to change over in a few minutes from the printing of a long typewritten report to an illustrated pamphlet, or an even more elaborate job in colour, on all kinds of paper.

There is only one source of supply for the genuine all-British Rotaprint, and only one solidly established organisation with the necessary technical experience and manufacturing resources for a 100 per cent. service—for this reason the full name is important to you—KAYE'S ROTAPRINT LIMITED, Honeypot Lane, London, N.W.9. Telephone: Colindale 8822 (12 lines).

**To KAYE'S ROTAPRINT, LTD., Honeypot
Lane, London, N.W.9.**

Please send me, without obligation, specimens of work printed on the Rotaprint and further details of the machine.

NAME

ADDRESS

B.S.



PROGRESS REPORT

PRINTING COPYING & DUPLICATING EQUIPMENT

the *Remflex* on stands 73 and 93—are now being shown for the first time at a Business Efficiency Exhibition. In each case a paper negative is produced by direct contact printing, and one or more positives are then produced from the negative, either simultaneously or within a matter of minutes. Once the negative has been made, any further number of positives (within reason) may be produced.

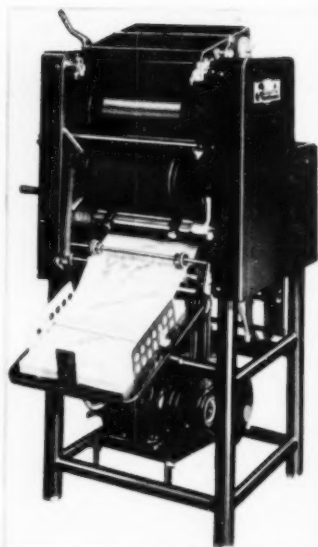
The process is essentially that of the photographer's "printing-out frame"; in other machines a camera proper is used to produce copies that may be the same size, smaller or larger than the original.

Microfilm, in which the copy is reduced so as to go on 16mm. or 35mm. positive film, is becoming increasingly popular where a "out frame"; in other machines a camera proper is used to produce large number of documents have to be stored for long periods. Many thousands of documents can be got on to a reel of film, and storage costs are reduced to negli-

gible proportions. In the latest microfilm equipment on stands 42 and 90, both sides of a document can be photographed simultaneously in a machine that, though hand fed, can cope with standard forms, such as cheques, at an almost incredible speed.

THE work of copying or duplication may be classified in two other ways. In the first comes the inter-departmental work, where a comparatively poor copy may be adequate, and the demand for quality comes solely from the need for accurate register in forms, etc. In both these contexts all forms will give a good job, and a decision as to which form to use depends on economics, which again depends on the number of copies required.

In the second category comes the material to be sent outside the firm, e.g., to potential customers. In this direction the offset litho process has made great strides in recent years, and its products can compare favourably with letterpress printing work—so much so that commercial printers and the printing trade unions are becoming seriously worried.



The modern offset litho office printing machine, such as this Rotaprint colour printing machine, can turn out work that compares favourably with commercial printing.



Photographing documents with the 'Recordak' Desk Model

Recordak Division of KODAK Limited

Adelaide House, London Bridge, E.C.4. Tel: MANsion House 9936
and at 11 Peter Street, Manchester, 2. Tel: BLACKf i rs 8918

Make **LIGHT** of the matter Let the '**RECORDAK**' DESK MODEL cope with your copying work

Tedious copying jobs are dealt with rapidly by the 'Recordak' Desk Model. It photographs cheques, letters and documents (up to 12 by 14 inches) on to 16 mm. microfilm, providing you with a film record which takes up 99% less space than the original papers—and needs no checking.

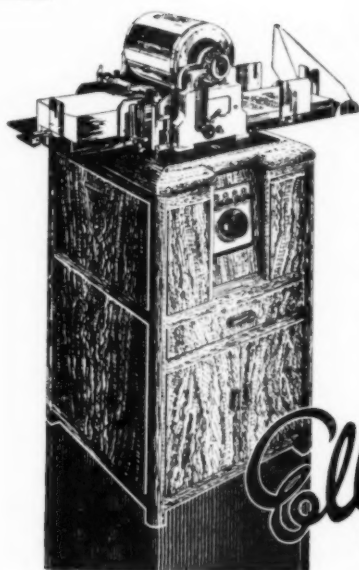


Here the operator is using the 'Recordak' Desk Model as a viewer for referring to a microfilm record.

Speedy reference to your microfilms is made with the same machine. Insert the processed film in the camera-head, lower the projection screen into position and turn the winding handle until the reference you seek is projected sharply and clearly.

Write for further information about this time- and labour-saving machine.

'KODAK' and 'RECORDAK' are registered trade-marks.



Collams

DUPLICATOR COMPANY LIMITED

5 DEAN STREET, LONDON, W.1 • Telephone GERard 4556

GOOD CRAFTSMANSHIP is its own advocate—and as proof, we still find ourselves with a waiting list of keen folk who are sure that an excellent thing is well worth waiting for. Their patience has been well tried, but we can only say that as their names are reached, they will have the best duplicators it is possible to obtain.

These machines are fully guaranteed for 10 years. The M100E shown here is power-operated, feeding faultlessly from more than a ream of duplicating paper. It has also a world-patented, fully automatic inking system which will give neat and beautifully fine copies from start to finish and its self-acting counter will immediately switch off from duplicating as soon as the pre-set number is reached. Speed and pressure are variable, reproducing all types of work—each copy exactly alike and equally excellent—of anything that can be written, drawn or typed and we shall be glad to give further details on request.

On view at STAND No 16, BUSINESS EFFICIENCY EXHIBITION, BINGLEY HALL, BIRMINGHAM, February 19th-29th.

THE LATEST PHOTOCOPY PROCESS

DUPLOMAT

and

Agfa-Copyrapid

Paper specially made for Duplomat

by

AGFA LIMITED OF WIMBLEDON

No Developing,
Fixing, Darkroom or
Rinsing

The twin invention of DUPLOMAT and COPYRAPID paper enables you in your office to make photostat copies of all kinds of documents and CONFIDENTIAL PAPERS in COMPLETE PRIVACY within a few minutes and at a cost of a few pence only.

Ask your nearest Office Equipment Dealer for a demonstration or please write or phone:



DUPLOM COMPANY

Proprietor: A. BREUER

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Telephone: MAIda Vale 1271

CURTA

The Calculating Machine which caused a sensation at the Business Efficiency Exhibition this year.



No office, laboratory or brief case is complete without a "CURTA"

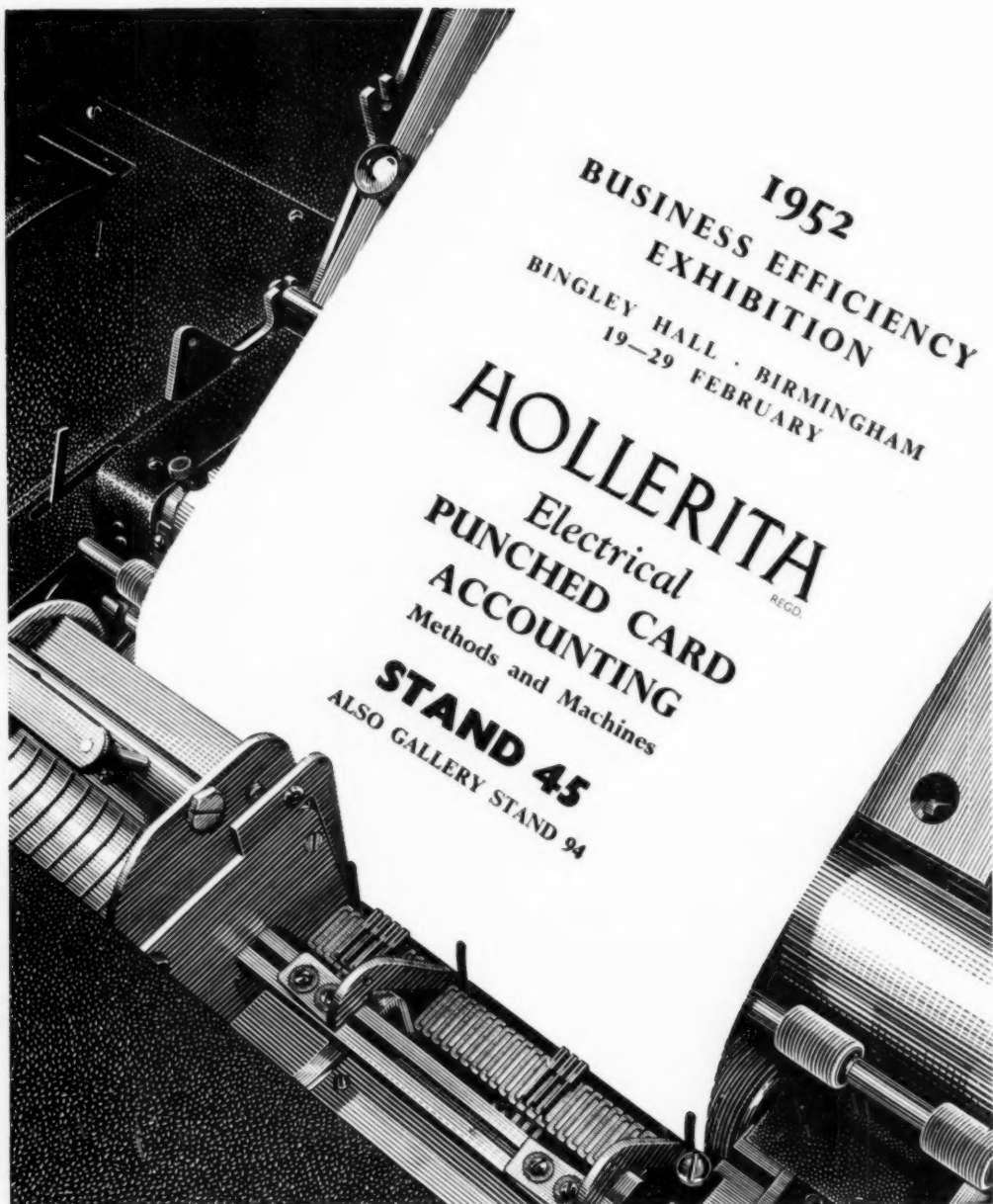
Please write or telephone for a demonstration

LONDON OFFICE MACHINES, LTD.
128 Terminal House, Grosvenor Gdns., London, S.W.1.
Tel: SLOane 1061, 1026.

You are invited to visit STAND No. 31 at the Business Efficiency Exhibition (Birmingham) February 19-29th.

FEBRUARY, 1952

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1952
BUSINESS EFFICIENCY
EXHIBITION
BINGLEY HALL · BIRMINGHAM
19—29 FEBRUARY

HOLLERITH
REGD.
Electrical
PUNCHED CARD
ACCOUNTING
Methods and Machines
STAND 45
ALSO GALLERY STAND 94

THE BRITISH TABULATING MACHINE COMPANY LIMITED

Head Office: 17 PARK LANE, LONDON, W.1. Offices in all principal cities in Great Britain and Oversea



SECTION TWELVE

PROGRESS REPORT

Punched Cards and Ancillary Equipment

PUNCHED card machines are the aristocrats of the office machinery world. They have usurped more of the clerk's stock-in-trade than any other type of machinery. Like most aristocrats, however, they tend to come expensive. Not even the most optimistic manufacturer would recommend punched card equipment for the small office.

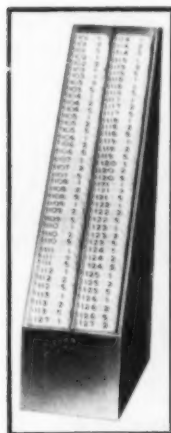
Because of the heavy investment

index card. The machine can print some or all of the information entered on the card, as can the addressing machine; but it can do more than this. It can sort cards and classify them according to any characteristic entered on them. And where the information consists of numbers, it can perform calculations involving addition, subtraction, multiplication and division, or any combination of these.

THIS mathematical facility enables punched card machines to act as extremely efficient book-keeping machines. Invoicing, for instance, can be carried out on the card-per-unit principle. A number of cards are gang-punched with identical information and stored in index trays for use as required. A pack of cards is prepared for each possible combination of commodity and quantity that might be included in an order, together with the appropriate code number, unit price, value of purchase tax (if any), and extension or invoicing value.

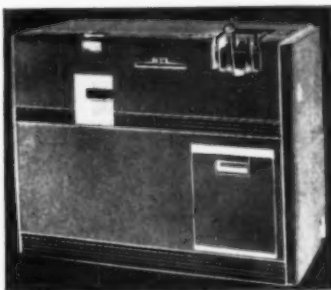
As orders are received, appropriate cards are selected or plucked by hand, all the cards for one order being gang punched with the date and the customer's identification number. This procedure not only reduces the punching and checking load; it also eliminates a similar amount of extension calculations and checkings, and means that the tabulator can

The new Evertaut pulling file.



produce invoices on pre-addressed blanks in multiplicate at amazing speeds, complete with totals. The cards are also available for punched card accounting and for punched card statistical and stock control records.

THIS is but one example of card-per-unit treatment; others (and there are many) are limited only by the ingenuity of manufacturers and users. New applications of punched cards are



The IBM calculator punch.



The Powers mark scanning punch.

involved, the consideration of just how these giants of the office world can best be put to use is an important matter. It demands expert and understanding investigation of all the routines of the office. For while it might be uneconomic to install punched cards to handle, say, invoicing alone, a reorganization of methods might enable the machines to undertake payroll work, sales analysis and other jobs as well, and hence be fully loaded throughout the working week. In these circumstances the use of punched card equipment might well be justified.

The punched card machine is in many ways akin to the addressing machine; its basis is a mechanized

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

ART METAL CONSTRUCTION CO. (85)

BRITISH TABULATING MACHINE CO. LTD. (45 & 94)

CAVE, C. W., & CO. (55)

EVERTAUT LTD. (14)

IBM UNITED KINGDOM LTD. (51)

LAMSON PARAGON SUPPLY CO. LTD. (40)

POWERS-CAMAS ACCOUNTING MACHINES (SALES) LTD. (8 & 23)

constantly being engendered by mechanical improvements in equipment. All punched card equipment stems from a single origin, but today the three firms exhibiting are entirely independent; two of them manufacture their equipment in Britain, and the third will do so on completion of its new factory.

The original Hollerith machines sorted cards electrically, and the tabulator displayed the answer, but did not print it. A Mr. Powers



1952
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19—29 FEBRUARY

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Electrical
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Methods and Machines

STAND 45
ALSO GALLERY STAND 94

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Head Office: 17 PARK LANE, LONDON, W.1. Offices in all principal cities in Great Britain and Oversea



SECTION TWELVE

PROGRESS REPORT

Punched Cards and Ancillary Equipment

PUNCHED card machines are the aristocrats of the office machinery world. They have usurped more of the clerk's stock-in-trade than any other type of machinery. Like most aristocrats, however, they tend to come expensive. Not even the most optimistic manufacturer would recommend punched card equipment for the small office.

Because of the heavy investment

index card. The machine can print some or all of the information entered on the card, as can the addressing machine; but it can do more than this. It can sort cards and classify them according to any characteristic entered on them. And where the information consists of numbers, it can perform calculations involving addition, subtraction, multiplication and division, or any combination of these.

THIS mathematical facility enables punched card machines to act as extremely efficient book-keeping machines. Invoicing, for instance, can be carried out on the card-per-unit principle. A number of cards are gang-punched with identical information and stored in index trays for use as required. A pack of cards is prepared for each possible combination of commodity and quantity that might be included in an order, together with the appropriate code number, unit price, value of purchase tax (if any), and extension or invoicing value.

As orders are received, appropriate cards are selected or plucked by hand, all the cards for one order being gang punched with the date and the customer's identification number. This procedure not only reduces the punching and checking load; it also eliminates a similar amount of extension calculations and checkings, and means that the tabulator can

The new Evertaut pulling file.



produce invoices on pre-addressed blanks in multiplicate at amazing speeds, complete with totals. The cards are also available for punched card accounting and for punched card statistical and stock control records.

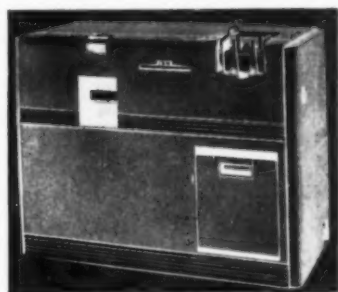
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The Powers mark scanning punch.

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BRITISH TABULATING MACHINE CO. LTD. (45 & 94)

CAVE, C. W., & CO. (55)

EVERTAUT LTD. (14)

IBM UNITED KINGDOM LTD. (51)

LAMSON PARAGON SUPPLY CO. LTD. (40)

POWERS-CAMAS ACCOUNTING MACHINES (SALES) LTD. (8 & 23)



PROGRESS REPORT

PUNCHED CARDS & ANCILLARY EQUIPMENT

invented a more highly mechanized punch for use with *Hollerith* machines, and later produced the first listing tabulator. He also developed a mechanical method for sorting cards. In due course, the *Hollerith* also became a lister.

In recent years the number of developments has been bewildering. Originally there were three punched card machines—a punch, a sorter, and a tabulator. Today there are several sizes of card, each with its own range of machinery. There are many types of punch, many types of sorter, and many types of tabulator. And there are omnibus machines which combine two or more of these three. In some applications the punched hole is replaced by a pencil mark, the marks being subsequently scanned and picked out by the machine by a photo-electric cell.

A perforated continuous tape, like a very narrow piano-player roller, can be produced as the cards are punched, and from this further cards can be punched as

and when desired. A similar tape can be connected with a Post Office teleprinter, and a second punch thereby be actuated at a considerable distance from the original.

It is obviously impossible in the brief space available to describe all the ramifications of equipment available; it would even be inadvisable to do so, since the salient characteristic of any punched card application is that it must be "tailor-made" to fit a specific situation.

Two extreme instances may illustrate the range of task that can be accomplished. The IBM electronic calculating punch on stand 51, now shown for the first time at a Business Efficiency Exhibition, can multiply, divide, cross-add and cross-subtract automatically in any order combination, punching the results on cards at the rate of a hundred a minute. Calculations are checked simultaneously and automatically. At the other end of the scale something like a medium-sized pair of pliers may be seen on the Powers stand; this is, in fact, an ingenious and accurate punch which has done much to extend the use of punched card equipment by enab-



The Hollerith type 504 multiplier.

ling punching to be done "in the field."

If the small office is precluded from using complicated mechanical and electrical punched card machines, there are still many ways in which it may use punched cards. The simple and ingenious *Paramount* card, with holes round the edges, can be sorted rapidly with a knitting needle. The *Finder*, on stand 55, uses a similar principle, though the holes are distributed over the whole surface of the card.

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FINDEX selects the cards mechanically, presenting ANY GROUP on demand without disturbing the filing order of the cards.

FINDEX eliminates the need to inspect every card in the index—a monotonous and fatiguing job.


FINDEX can be handled as freely as an ordinary card index.

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THE PROTECTION of important correspondence and documents is too often entrusted to an ordinary steel filing cabinet, which does not, of course, offer a high degree of resistance against fire, fall or theft. The illustration (left) shows a specially constructed MILNERS Fire-Resisting Safe fitted with a Four-Drawer Vertical Filing Cabinet, which can be supplied with a castor base unit if required.

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London: 31 High Holborn W.C.1
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FEB. 19th—29th
Stand F.1**

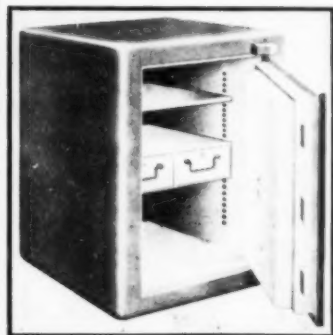


SECTION THIRTEEN

PROGRESS REPORT

Safes—Fire and Theft Protection

THE progress achieved in the design and construction of safes is a function of the never-ending battle between the professional cracksmen and the safe manufacturer. When the safe manufacturer is on top (as is usually the case) the rate of progress is slow, since there is little need for radical improvement. When, as occasionally happens, the cracksmen gets a new weapon in his armoury, then development in safe design occurs rapidly until the new menace is satisfactorily met.

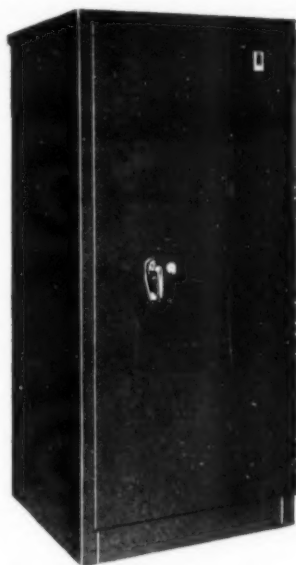


Milners' new adjustable safe.

In the last decade the safe manufacturer has been decisively on top, and changes in design have been correspondingly few. The designs to be seen at Birmingham have for the most part been seen many times before, and will no doubt be seen many times again. They offer full protection from the depredations of the criminal with attractive appearance. When we read in the Press that premises have been entered and a safe broken open the chances are that the safe was an obsolete model.

The shortage of steel also is an important factor, since safes probably consume more steel per cubic inch of capacity than any other form of office equipment. Safe manufacturers have thus been more heavily hit by the February allocations of steel than many other concerns; the managing director of one leading firm re-

cently reported that his allocation of steel was insufficient to enable him to fill export orders from dollar countries already on his books, so that he was having to refuse any further orders from these countries. One can imagine an H. M. Bateman cartoon on "The Englishman who ordered a new safe at Birmingham"!



Remington Rand safe cabinet.

It is a testimony to the enterprise and initiative of this firm that, despite their parlous steel position, they have recently introduced a completely new range of safes that combine the full protective qualities of previous models

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69

CHUBB & SON'S LOCK & SAFE CO. LTD. (72)

MILNERS SAFE CO. LTD. (71)

MOORE'S MODERN METHODS LTD. (6)

OFFICE MACHINERY LTD. (64)

REMINGTON RAND LTD. (73 & 93)



Chubb safe cabinet.

with a great measure of convenience for the user. The new models, which may be seen on stand 71, have shelves and internal drawers that are adjustable for height within the safe, so that the user can make the fullest possible use of the necessarily limited space available.

THE burglar, however, is not the only hazard to which the office manager is subjected, and, perhaps, not even the most serious. The incidence of fire is at least as common and its effects are usually more serious. As an advertiser points out, only just over 40 per cent. of all firms losing their records as a result of fire ever manage to open their doors again for business. Normal steel storage equipment will protect papers from a passing flame, but will merely serve as an oven in a serious fire and char the contents.

To meet this hazard manufacturers have devised fire-resistant equipment which, while not attempting to give full protection against the professional cracksmen, is strong enough to deter an amateur and, at the same time, give full protection against fire. Fireproof equipment of this type is available for the storage of all types of documents, in the form of storage cupboards, three- and four-drawer filing cabinets, ledger card storage trays, and visible card index storage cabinets. For the executive who prefers to keep his papers close at hand, there is also a fireproof executive desk.



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PROGRESS REPORT

Typewriters

THE typewriter has for years been the maid-of-all-work of the office and, on the whole, has been an extremely efficient and dependable maid. It has reproduced words legibly and rapidly. Until recently, however, no one would claim that the typewriter could produce work as easy to read or as attractive as the letterpress printer. Modern improvements have changed that, and the



Royal electric typewriter.

new machines available can produce, and are producing, written material which, in appearance, is distinguishable from printed matter only by the expert.

The main factor here has been the emergence of the electric typewriter, now gaining ground rapidly in progressive offices. Supplies of electric typewriters in the last few years have been limited, but they are now being manufactured in Britain, and delivery times are diminishing.

A STRONG case for electric typewriters can be made out on the basis of productivity alone. By removing from the typist the effort needed to return the carriage after each line and reducing the pressure needs on the keys to a mere touch, an electric typewriter enables the typist to turn out a greater quantity of work in the same time without a corresponding increase in fatigue. An exhaustive time and motion study carried out by one large organiza-

tion showed that girls working on electric typewriters turned out approximately 5 per cent. more work than their colleagues working on manual typewriters.

Greater output, however, is by no means the only advantage offered by the electric typewriter. The fact that the actual blow struck by the typewriter key on the paper is powered by the electric motor, and not by the operator's fingers, means that a perfectly even pressure is obtained even by the most inexperienced typist. Any junior can thus turn out work that looks far more attractive than that of even the most skilled touch typist and is far more legible.

The impact of the keys, besides being more even, can, if necessary, be adjusted to give a far greater force than that obtained from human fingers. This means that the number of carbon copies that can be taken can be increased up to as many as 20. Hence, in many cases, a simple change from manual to electric typewriters may eliminate the necessity for using a duplicator.

Legibility depends not merely on evenness of touch, but on the type face used, and on the spacing of individual letters and of words. The standard typewriter face was evolved many years ago, and was determined largely by the necessity for securing a sharp image through a ribbon, and for having each letter the same width. Thus the letter "i" takes up the same space on the page in typewritten



The IBM Executive typewriter.

matter as the letters "m" or "w," an anomaly from which letterpress is free. The modern electric typewriter is free from both these limitations. In the IBM Executive, on stand 51, for instance, a fine carbon strip takes the place of the normal inked ribbon, giving a clean-cut print that compares very favourably with letterpress.

Carriage movement is also controlled electrically, so that the



The British Olivetti M44.

lateral movement made after each letter is struck varies with the width of the letter that has been struck; thus when the "i" is struck the carriage moves less distance than when "m" or "w" is written. The result, again, corresponds to letterpress and has enabled the manufacturers to design and use three new type faces, each of which is pleasanter and more legible than the standard type.

Other companies have also introduced new type faces.

THE main remaining difference between material typewritten on standard machines and letterpress printed work is the fact that the right-hand margin presents the normal jagged appearance, while the left-hand is perfectly

EXHIBITORS

Stand nos. in brackets; addresses, etc., on page 69.

BRITISH OLIVETTI LTD. (9)
BRITISH TYPEWRITERS LTD. (1)
BURROUGHS ADDING MACHINE LTD. (42 & 90)
IBM UNITED KINGDOM LTD. (51)
OFFICE MACHINERY LTD. (64)
REMINGTON RAND LTD. (73 & 93)
ROYAL TYPEWRITERS. (65)
UNDERWOOD ELLIOTT FISHER LTD. (37)



PROGRESS REPORT

TYPEWRITERS

vertical. Two comparatively new machines, the *Varitype* and the *Corhead DSJ*, will even overcome this by adjusting the spaces between the words so as to secure as good a register on the right as on the left. The work produced on these machines can only be detected from ordinary letterpress printing by the expert eye. They are slower in operation than the



The Hermes Ambassador typewriter.

The Remington Rand electric typewriter.



normal typewriter, but under present conditions can usually produce work more quickly than the ordinary commercial printer. They are, too, considerably cheaper.

Special-purpose machines of this type are naturally more expensive than standard models, and for ordinary run-of-the-mill work in the small and medium office the manual typewriter will continue in operation and give very satisfactory service. There are many admirable models available, some of which may be seen at Birmingham; choice between them is very largely a matter of personal predilection based on minor differences. In the field of portables

there is a definite trend towards lightness; the *Scribe*, on stand 9, and the *Empire Aristocrat*, on stand 1, are noteworthy in this respect.

The supply of typewriters, thanks to increased British production and higher imports from the Continent, is at the moment sufficient to meet demands, but the stringent metals position and the recent restrictions on imports may affect the situation adversely within the next few months.

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68

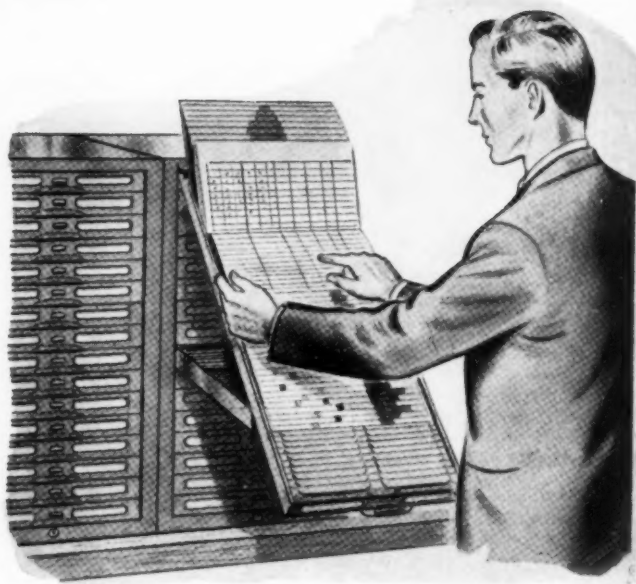
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Records are management's business memory—they contain all the facts on which executive decision must be based. A sure speedy system is a dynamic tool for greater productive efficiency.

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Kardex is but one of the filing and recording systems perfected by Remington Rand.

See them all at the Business Efficiency Exhibition, Stand No. 73.

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The easier way to office efficiency

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SECTION FIFTEEN

PROGRESS REPORT

Visible Records and Filing Systems

FILING systems and visible records are, in a sense, complementary to the machines and equipment described in other sections of this report. These are concerned with producing office records on loose, separate pieces of paper or card. But this is only part of the story. It is essential that a record should be kept accurately; it is no less essential that an enquirer should be able to refer to that record quickly.

A good craftsman has good tools; it by no means follows that good tools will make a good craftsman. The best filing systems and the finest possible records can only give a mediocre showing if they are not properly handled. The crux of the matter is not so much the equipment as its suitability for the particular job and the way it is used.

THE problem both of filing and of visible records is thus fundamentally the same problem, i.e., that of arrangement or grouping of pieces of paper or card. Filing is mainly concerned with papers of various or random sizes, many of which cannot be controlled or determined by the particular business concerned; whereas visible records are of definite standard sizes and lay-out, which can and should be directly controlled by the business concerned.

The prevailing method today, which allows the utmost freedom of arrangement, is evolved from a single source for both filing and visible records. Both have sprung basically from the original card system, invented and perfected by Library-Bureau of Boston, U.S.A. (which now forms part of the Remington Rand organization in this country). Library-Bureau extended this card idea to include random sized and flexible papers by enclosing them in folders of uniform dimensions and a measure of stiffness, so that these folders could be housed as were the cards, and given the same scope for unlimited variation of

arrangement to conform to every possible need, as the card system itself. Hence the vertical file—housed in outsize card trays, i.e., the ubiquitous vertical filing cabinet.

There is no good reason why the use of folder and vertical file should be restricted to holding random size papers, such as incoming correspondence. It is common practice in the mechanized office to produce various forms in multiple for distribution to various sections in the organization. These sections may have to refer back to their copies at a later date—or, in default, copy them wholly or in part into books. If uniform-sized and planned forms are filed in a folder, then the speed of referring to a given class of item on a number of different forms is little, if any, less



A Cardwheel rotary index file.

speedy than casting an eye down a column on a tabulated list.

Such files can also present a much neater appearance and prove a real help and economy outside, but complementarily to, the mechanized office. They complete the picture. The main development of the vertical file has been to suspend the folder, to broaden the upper edge to increase reference facility, and to arrange for the vertical stance of folders, on shelves, etc., instead of lying flat. The original card system still persists in the card ledger and in the addressing plate, stencil or spirit addressing master and the punched card. It is, however, in the numerous and more restricted offshoots that the full significance of this invention has become apparent.

In the card index a rod restricts mobility, so that those who refer are deterred from removing cards. In the *Roneotol* method, ledger cards, or the like, are given an effective measure of edge visibility by the ingenious use of microscopically thin metal springs. Another comparatively new development consists of housing the cards round the rim of a wheel, to speed up entry and reference. In two cases cards are punched or slotted so that they will not fall out, and in the latest example a series of moving belts give the same effect, but without need to punch or slot the cards. This means that existing cards can function perfectly in this housing.

IN the visible index, of which Kardex was the pioneer in this country, cards are arranged

EXHIBITORS

Stand nos. in brackets: addresses, etc., on page 69

ADDRESSALL MACHINE CO. (61)
ADDRESSOGRAPH - MULTIGRAPH LTD. (63)

ART METAL CONSTRUCTION CO. (85)

BLOCK & ANDERSON LTD. (2)

BULMER'S CALCULATORS LTD. (47)

BUSINESS PUBLICATIONS LTD. (85)

CARTER-PARRATT LTD. (15 & 17)

CAVE, C. W., & CO. LTD. (55)

CHUBB & SON'S LOCK & SAFE CO. LTD. (72)

CONSTRUCTORS LTD. (77)

EVERTAUT LTD. (14)

EXPANDEX, VISIBLE FILING CO LTD. (12)

JONES, PERCY, (TWINLOCK) LTD. (38 & 44)

KALAMAZOO LTD. (27 & 33)

MANIFOLDIA LTD. (11 & 20)

MILNERS SAFE CO. LTD. (71)

MOORE'S MODERN METHODS LTD. (4)

NATIONAL LOOSE LEAF CO. LTD. (18)

OFFICE MACHINERY LTD. (64)

REMINGTON RAND LTD. (73 & 93)

RONEO LTD. (32)

SHANNON LTD., THE. (74)

STANDARD OFFICE SUPPLIES CO. (78)

STOLZENBERG PATENT FILE CO. LTD. (69)

TRADE LOOSE LEAF CO. LTD. (59)



PROGRESS REPORT

VISIBLE RECORDS AND FILING SYSTEMS

by various means to overlap like slates on a roof so that a strip of each is visible. There are some 70 exposed strips to a tray, which offer almost ideal conditions for signalling, etc.

The strip index differs from the visible index, in that the record is fully exposed, but so narrow as to be confined to the overlapping strip of the visible index, without, that is, the shrouded space for record. If one can imagine each separate line of writing in the old bound book index to be individually movable, so that the index could always be kept in correct A B C order without rewriting the whole page, the strip index would fill the picture. The strip index has signalling possibilities on a par with the visible index.

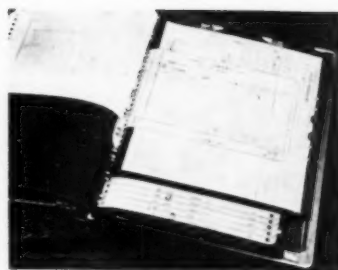
In the *Chainindex*, a series of small cards are so devised that a number can be hooked together to form a chain of as many as 30 of them in two columns—all completely visible, on the opening or

turning up of one *Kardex* visible index card. In this way a very compact index may be built up which has also the advantage that, if appropriate addressing plates or stencils are available, they can be used to compile the index mechanically with mechanical precision and speed.

Alongside the foregoing developments of the mobile card system as applied to cards, there has also grown up a mobile record idea as applied to the pages of a bound book—giving them some of the freedom enjoyed by the card, i.e., the loose leaf and the loose-leaf binder, for which the names of Kalamazoo, Twinlock and Moore's Modern Methods stand out as pioneers in this country.

Then there is the loose-leaf counterpart of the visible index, i.e., in the visible binder, where, instead of two pages being visible at an opening, strips of many smaller sheets are exposed to view.

Reference has already been made to a new invention, on stand 74, in which the copying of matter on to the *Shannoleaf* visible binder is avoided by the *Visicopier*. Another way of avoiding copying



The Shannoleaf loose-leaf binder with a Visicopier attachment.

in such records is to file a copy of a duplicated record on which the epitome appears across the lower edge in such a visible binder.

Finally, there is the loose-leaf counterpart of the *Chainindex*, such as is on show on the Kalamazoo stand, where a number of fully-exposed cards are so contrived as to permit of their being hooked together, and so expose a considerable number at an opening. Their greater width and correspondingly less depth may, however, preclude the use of addressing machinery to speed their entry or compilation.

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STAND No. 69

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BIRMINGHAM:
11, ALBERT STREET
Phone: CENTRAL 6487

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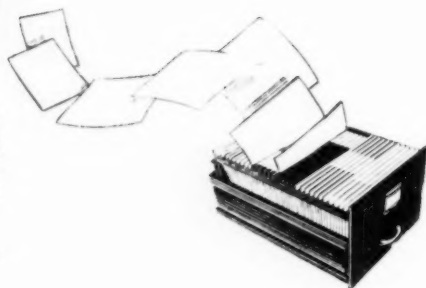
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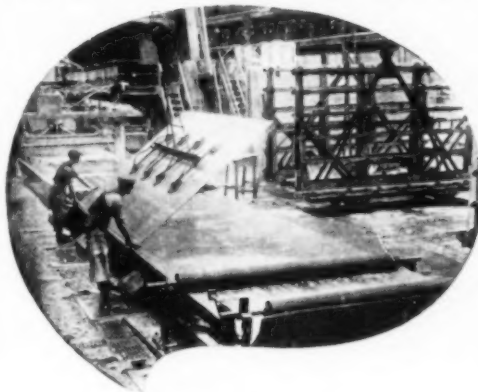
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Work Saving is a Continuous Process At Nuffield's

By C. BRYANT

Making the most use of men and machines should not be a sporadic activity on the part of management, but a continuous process. So it is at Nuffield's, and here are four case histories from their factories.

ACCORDING to Professor John R. Immer, America's one-man productivity team, "20 per cent. of all industrial activity in Britain today represents unemployed resources of machines, equipment, labour and capital;" and this, he says, is a conservative figure. What can be done? Professor Immer believes that the answer lies in work saving—hence the idea of a Work Saving Week, as mentioned in last month's BUSINESS. Work saving involves the examination of the method used on every job in the home, office, farm and factory. Industrial applications are, of course, more complicated.

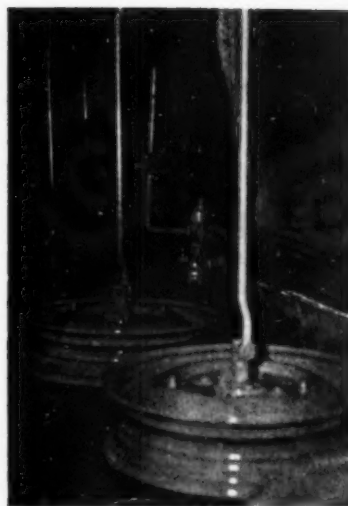
The important thing is the attitude of mind. It is significant that last November's Work Saving Week was supported by organizations whose reputation for efficiency already stands very high—Rubery, Owen and Co., Fisher and Ludlow, Ltd., G.E.C., Guest, Keen and Nettlefolds, Ltd., Hoover, Ltd., I.C.I., Joseph Lucas, Ltd., Tube Investments, Ltd., English Electric Co., Ltd., Edison-Swan Electric Co., the Nuffield Organization, Lever Brothers and Unilever, and many others.

What they did towards work saving has yet to be reported, but early accounts of their activities suggest that education, consul-

tation and factory propaganda must have played their part. For many years now, work simplification has been fostered and encouraged within the Joseph Lucas Organization—they even have a residential course in the subject, which takes place in their training college at Birmingham. Electro-Hydraulics, Ltd., a part of the Owen Organization, re-publicized their works suggestion scheme as part of a special campaign during Work Saving Week.

Organizations that are conscious of the need for work saving make

frequent changes in their methods of manufacture—more frequently, perhaps, than firms who are not constantly reminding themselves of the need to get more production without additional physical effort. Naturally enough, changes of this kind take place at all times and without being associated with special "drives." Such is the case of the Nuffield Organization, who are prominent supporters of the work saving movement. In various factories and departments, this concern has made changes which are of lasting interest. Four



Right, at the foundry, dust and steam are removed from the moulding box before reaching the operators.

Centre, the air-operated robot "hand" on this press never gets tired and cannot have an accident.

Far right, this silencer body forming machine takes only 12 seconds to do the job from start to finish



Left, close-up of the operation of the moving automatic spray for the electrostatic painting of car wheels at Nuffield's.

case histories are given in this article and they should prove of considerable value to executives who are interested in getting higher output through work saving.

(1) USING ELECTRICITY TO PAINT CAR WHEELS. By means of an electrostatic spray-painting booth now installed at Cars Branch for painting wheels, output has increased to 1,900 wheels per day and a 50 per cent. saving in paint has been effected. On the old system wheels were spray-painted by hand, which wasted paint as the surplus was carried away in the booth ventilation. It was also an awkward job to do both sides of the wheels as well as the grooves.

The job has been simplified and streamlined by the Engineering Department, who were responsible for the new type of booth. Equipment includes a transformer situated on the roof, with an output of 130,000 volts. The current flows through a number of thin wires running horizontally and paralleled inside the booth and insulated from all steelwork. Thus a magnetic field is created, which draws the paint to the wheels. Here it sticks, and practically none of it is wasted.

Carefully placed at various levels inside are four paint-spray guns, which are set in position

before the day's operations start and then remain fixed and operating automatically throughout the working day. They work generally at a pressure of 5lb. air and 1lb. paint, which compares with that of hand-operated spray guns on this job of about 60lb. air and 10lb. paint.

The wheels come into the shop with a primer coat applied and stoved. After this they are suspended in a horizontal position from a moving conveyor, which carries them into the booth. Once inside, they come within range of the first spray gun, shooting in a downward direction; at the same time a knurled disc at the top of the attachment contacts a rubbing pad at the same level, thereby rotating the wheel and its attachment—a process which continues as long as the wheel is in the booth.

Sprayed All Ways

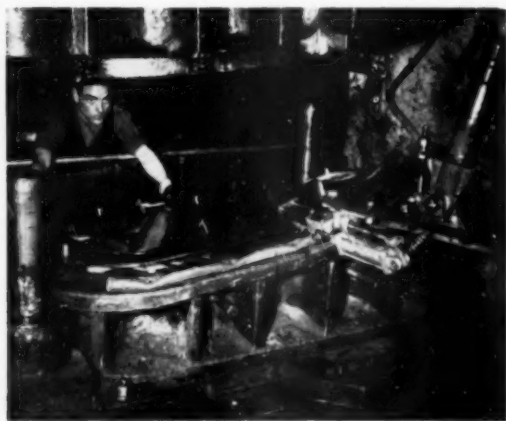
Still spinning, the wheel reaches the end of the small booth and is routed round the corner by the conveyor. Here, a moving spray, operating on a block-and-pulley principle, covers the grooves which have been missed in the previous stage. Finally, before the wheel emerges through small metal doors—rather reminiscent of a ghost train bursting forth from a fair-ground booth—it is subjected to two more spray guns, one trained upwards from beneath and the other giving a downward jet. Once outside the booth, it is given a three-minute flash-off period.

(2) TAKING THE STEAM OUT OF THE JOB. In a modern mechanized foundry, moulding boxes are kept in circulation by knocking out the castings while they are still red hot. The moulding box, complete with sand and casting, is picked up mechanically and placed on a vibrating grid which dislodges the sand. The disturbance of the sand round the red-hot casting releases large quantities of steam, smoke and dust—and this can produce a bad atmosphere in the shop and cause difficult working conditions at the knock-out station.

The obvious solution is to use suction fans to remove the dust and steam as they are produced. Experiments have shown that if the suction is upwards the operators must bend into the steam to remove the castings, and if it is downwards the suction has to be so great that large quantities of sand are removed with the smoke. The problem has been solved at Nuffield's Wellingborough Foundry by the use of side-suction hoods.

The suction fans used, produce a thirty-mile-an-hour gale at the entrance to the hood, which is sufficient to take up the whole of the dust and steam. The speed of this gale decreases rapidly as it moves away from the hood.

(3) ROBOT "HAND" SPEEDS PRODUCTION. An air-operated robot "hand," the first of its kind to be installed in this country, has increased output from the presses at Nuffield Metal Products, Ltd., Birmingham. The robot hand is an adaptation of the American



automatic iron hands which were demonstrated to Mr. L. J. Tolley, General Manager of Nuffield Metal Products, Ltd., during a visit to the U.S.A.

Over there they are designed mainly to deal with a particular pressing, but Mr. Tolley thought that he could see how they could be adapted for a more universal application in British press shops. Arrangements were made for one of the devices to be imported for experimental purposes and the necessary alterations were soon carried out. Now the hand is operating 18 hours each day.

Increased Safety

The air-operated mechanism is controlled by solenoid air valves. It removes pressings which previously had to be lifted by one, or even two, operators. In addition to increasing output and saving labour, the hand also affords a greater measure of safety.

The equipment is at present only made in the U.S.A., but negotiations are proceeding to manufacture it in this country. The extent

of the impact of the device on the presswork world and allied industries cannot yet be fully gauged, but British engineers will be quick to grasp its potentialities.

(4) SIX-SECOND SILENCERS.

The final case history from Nuffield concerns the installation at Llanelly of a Stolp silencer body-forming machine — the first machine of its kind to go into production. Although it takes 12 seconds to complete a single body from start to finish, production is at the rate of 600 an hour, or one every six seconds.

Approximately 18ft. long and 2ft. wide, the machine produces a continuous stream of cylindrical (or elliptical) steel tubes in 18-gauge sheet steel, with a tight-locked seam $\frac{1}{2}$ in. wide, and up to 4ft. 6in. each in length. Diameters of tubes range between 3in. and 5in. The motive power is a 15-h.p. induction motor, with reduction gear.

A chain-driven carriage has a 10ft. long mandrel attached below it which is driven through a succession of forming dies and seaming

rolls. Underneath the head of the mandrel is a lift die, also chain operated.

In operation the blank is placed on the lift die which moves in an upward direction, thereby "U"-ing the blank round the mandrel. Simultaneously the carriage moves forward, forcing the component through the first die and rolls. The lift die and mandrel return to their original stations, and another blank is placed in position.

Identical Shapes

The "U"-ing operation is repeated with blank No. 2; meanwhile component No. 1 proceeds on its journey through the die and final seaming rolls. A steel gate at the end of the final die drops into position, stripping the completed tube from the returning mandrel.

In shape and size each completed body is identical—a factor of obvious value in succeeding operations on the assembly line.

The Survey of Modern Industrial Equipment begins on page 140.

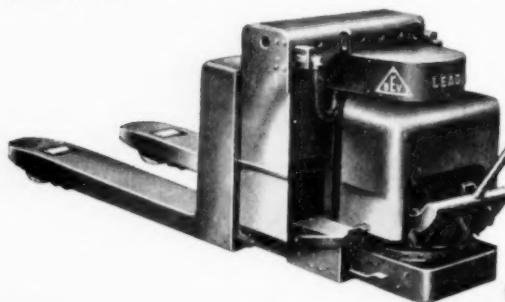
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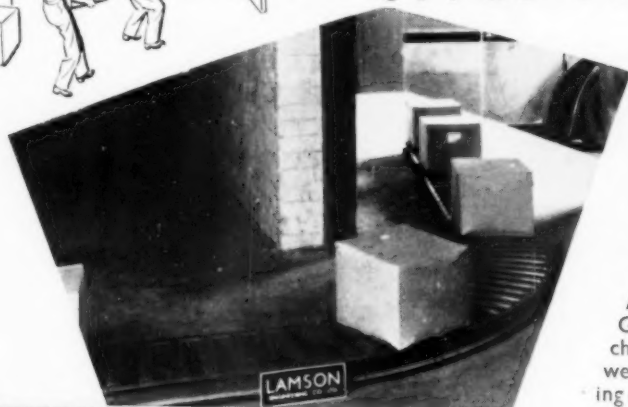
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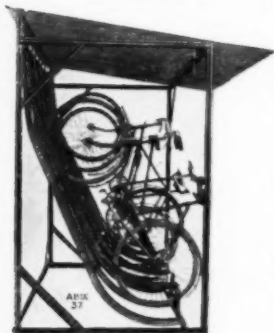
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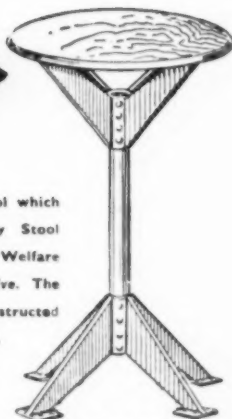
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from 18 to 26 inches

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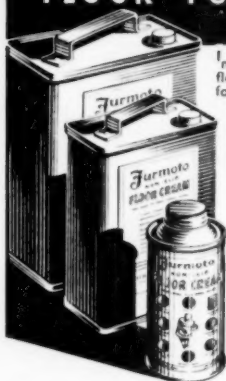
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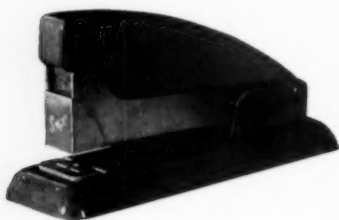
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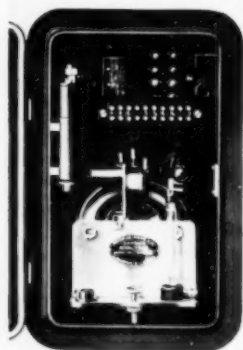
140

Survey of Modern INDUSTRIAL EQUIPMENT

INSTRUMENTS

Gas Meter

ANALYZING the gases from metallurgical furnaces, boiler flues, etc., and measuring the oxygen content of the atmosphere for various other processes, such as coal-gas manufacture and oil refining, is always necessary to ensure maximum efficiency and for fuel economy tests. Up to now this has involved the use of expensive and complicated equipment.



Furnace atmospheres are broken down by this analyzing unit.

Often oxygen content had to be estimated by "inferential" methods—measuring the other gases first and subtracting them from the total volume.

An instrument has now been developed that is smaller, cheaper and far simpler to use and allows continuous analyses to be made. The operation of the instrument relies on the fact that oxygen, unlike most other common gases, is attracted by a magnetic field. This property is used to create a "magnetic wind" in a pair of tubes. Temperature differences result, and these cause differences in electrical resistance which are measured on a meter.

Samples of gas are taken with a refractory filter and taken in pipes to the analyzing unit. Changes in

oxygen content begin to register in five seconds, and a 95 per cent response is obtained in 45 seconds.

The instrument is entirely mains operated and is fitted with a transformer to eliminate fluctuations in the supply voltage.

—Enquiry Ref. No. F.2/10

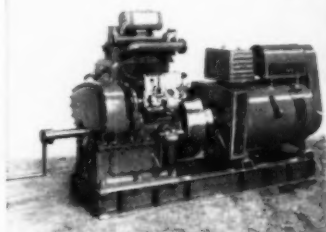
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Versatile Diesel

THERE are many applications for which the *Sentinel* two-cylinder industrial diesel engine is suitable. Power take-off to machinery or electrical generating equipment can be by direct, gear or belt drive, and the engine may be mounted as a stationary or portable unit.

Rated output is 30 b.h.p. at 1,500 r.p.m., and fuel consumption is low: 0.42lb. an hour per b.h.p. The engine is designed for long periods of running under arduous conditions without cleaning, decarbonizing, etc. Nevertheless, all the parts are readily accessible for inspection—the cylinder head covers lift off to expose the valve mechanism, and large doors in the engine housing allow the working parts of the crank chamber to be reached. In addition, all the assemblies are constructed as units spigoted into the crankcase, and these can be removed individually for more thorough inspections.

The twin cylinders are mounted in line and their total capacity is



Thetwin-cylinder Sentinel diesel.

BUSINESS

3.05 litres. A decompression device makes hand-crank starting easy. Weight of the power unit when dry is 1,070lb., and it is suitable for operation in any climate.

—Enquiry Ref. No. F.2/11.

HEATING & VENTILATION

Forced Heater

STEAM or hot water can be used to operate the *Universal* forced convection heater. The units are encased in removable heat and sound-insulated steel panels, and can be supplied to stand on the floor or for mounting on walls or ceilings. The vertical or horizontal slats of the outlet



For forced convection heating.

louvers can be adjusted through 90 deg., and the units can be arranged to direct warmed air to any part of a room.

Air is drawn in through an inlet grille in the base of the cabinet; it is warmed by passing over a heating coil, and is then forced out through the louver by a quiet-running, low-speed fan. A fresh-air inlet is fitted on the opposite side of the cabinet to the room inlet, and a damper is provided to regulate the amount admitted.

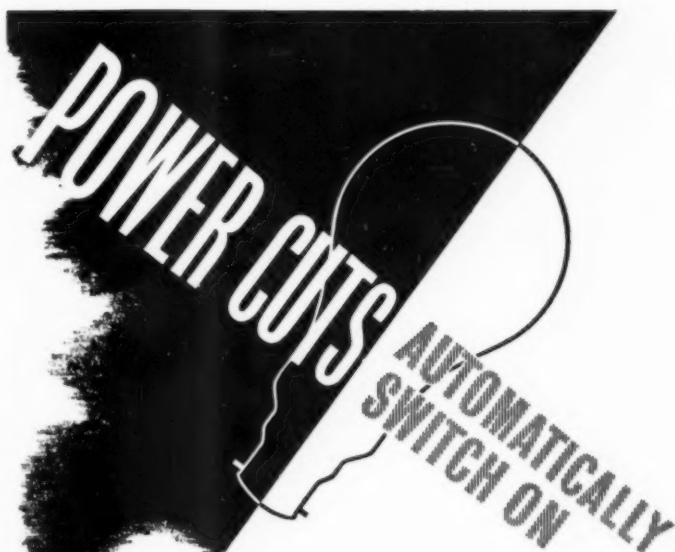
Capacities of the units vary between 40,500 and 16,000 B.Th.U.s. per hour, according to the velocity of the air flow.

—Enquiry Ref. No. F.2/12.

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FEBRUARY, 1952



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operated electric motor. As the
complete unit weighs only 80lb., it
is easily moved around by the
carrying handles fitted. A flexible
metal hose which is connected to
the top of the fan chamber enables
the fumes to be collected near
their source.

—Enquiry Ref. No. F.2/13.

LIGHTING EQUIPMENT

Lamp Changer

CHANGING fluorescent lighting
tubes fitted over machinery,
conveyors, assembly lines and in
drawing offices is one of those
"nuisance" jobs that has to be
done. A new device — the
No-Climb — enables tubes of the
bi-pin type to be removed and re-
placed in their holders by an
operator standing on the ground.

The equipment consists of a hol-
low tube with a head for gripping
and rotating the lighting tube, and
a moulded rubber handle at the
other end. When this handle is
manipulated, it revolves rollers in
the head, which turn the tube and
release it. Extensions can be
screwed into the handle for use on
fittings up to 15ft. above ground.

—Enquiry Ref. No. F.2/14.

INDUSTRIAL FILMS

Continued from page 51

and overseas, should not expect to pay less than £1,000 per reel, and might well be getting excellent value were the cost double or more.

What safeguards are there, then, against being overcharged? Primarily, the law of competition. Competition is too keen in this field for philandering with money and economic stability comes not from making an excessive profit out of one film, but in making a sponsor a regular client.

Secondly, when in doubt the usual commercial practice of making a discreet enquiry from trade associations can be operated. Confidence in the abilities and trustworthiness of a film company is more important than hard bargaining. Faced by a budget, the temptation to tamper with its arithmetic is always great. But such economies, when insisted upon against the advice of the producer, are dearly bought.

If production costs constitute the major slice of expense to the sponsor, distribution costs are no negligible item. To exploit "Paper Chain" over a period of 18 months, Wiggins, Teape, Alex Pirie (Merchants), Ltd., have sent 21 copies or prints overseas and have used two 35mm. prints and twelve 16mm. prints in Britain. The film runs for 30 minutes, which is equivalent to three reels per print. Each reel on 16mm. costs £12 10s., so that the 33 prints so far circulated have cost £37 10s. each.

The worthwhileness of this expenditure can only be measured on two counts—the size and composition of audience reached. In the first 12 months, the firm estimate that a selected audience of 15,000 saw the film. A film of this kind is in no danger of an early death; its expectations of life and usefulness as a recruiting force for new labour are good for many years. And with each passing year, the cost per head of audience is progressively lower to the sponsors. Therefore, by knowing the potential size of one's audience before signing a contract with a film company, an accountant can calculate with some accuracy the cost of reaching that target in the Dyaks language of human heads. Every other measurement, whether in terms of prestige, public relations, or sales, is imponderable.

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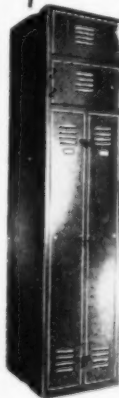
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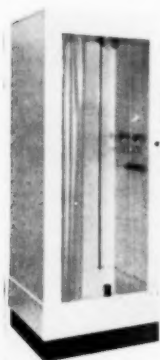
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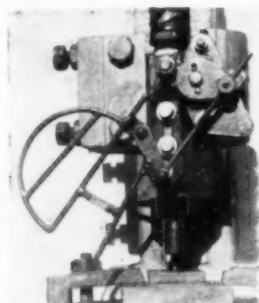
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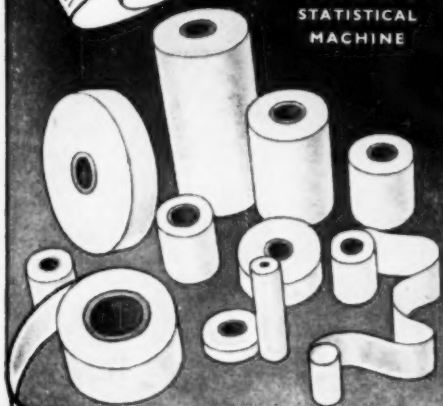
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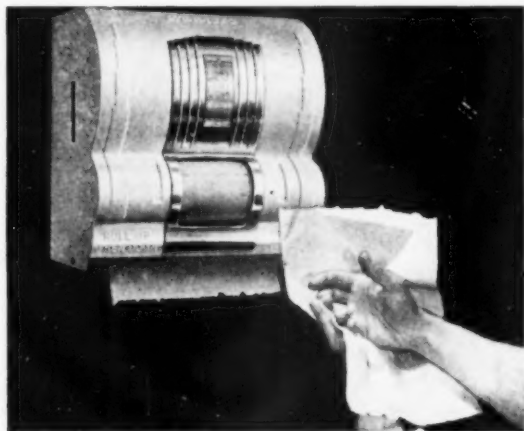
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Strange! I could have sworn I caught a breath of real fresh air, the kind that blows off the sea across fields of new-mown hay.

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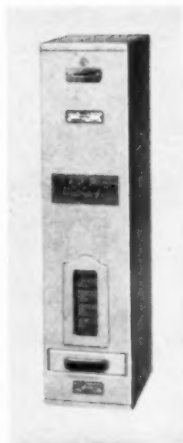
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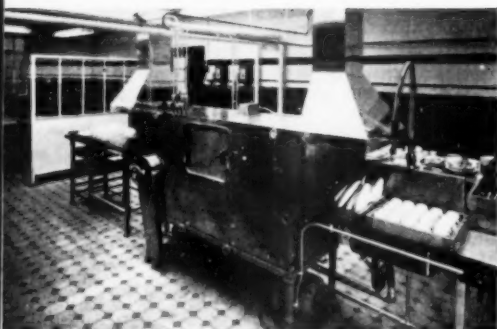
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Top : the main kitchen, showing the central gas range with steam-heated bain-marie. Below : a dish-washer with pre-washing spray.

New Kitchen Layout Speeds Meals with Less Effort

By DAVID EARLY

I.C.I., Ltd., are now moving back into their pre-war headquarters in Millbank. They are seizing the opportunity to alter kitchen and canteen layouts to make the flow of work easier and to speed the preparation and serving of meals.

IMPERIAL Chemical Industries, Ltd., are now in the process of moving back into their pre-war headquarters building in Millbank. During the war the building had been used by the Government and partitions were erected and various other changes made to meet the needs of the day. Up at the top of the building, on the seventh and eighth floors, the facilities which had been provided for staff catering were stripped and the space used for offices.

The operation of moving back provided the opportunity to review the layout and equipment of the departments. Many changes are being made with a view to making the flow of work easier, and this technique of work study—or applied commonsense, as some of the responsible executives prefer to describe it—has been applied to the staff catering facilities.

From the point of view of executives who are responsible for the planning of canteens of all

sizes, the changes in the layout and equipment of the kitchens are of particular interest.

The main kitchen. The simplest way to describe them is to take each section in turn, beginning with the main kitchen. This used to contain large pan washing boilers heated by gas, and these were uneconomical and unhealthy. The area in which they operated was enclosed and there was neither natural light nor natural ventilation. Pan washing has now been moved to a position adjoining an outer wall and the old boilers have been replaced by galvanized sinks which are fed with hot water from steam-heated calorifiers. The sinks are also fed with steam injectors which can be used to reheat the water to boiling point, if this is necessary. An important advantage of the move is that the operation of washing cooking utensils is carried out closer to the cooking range, thus shortening the distance which these dirty utensils

have to travel before they are cleaned up.

New equipment also includes modern fish frying ranges. These are an improvement on the older types by reason of their method of heating. Tubes are inserted into the fat itself, the idea being to create a "cold" zone into which crumbs, pieces of batter and food, etc., can fall and remain without burning. Since it is the food which burns in fat rather than the fat itself, this arrangement—in conjunction with thermostatic control of the heating elements—makes for considerable economies of food, fuel and fat.

The dish washing department. This department has also been changed in various respects. The old wooden sinks have been replaced by stainless steel sinks because these are more hygienic and much more easy to clean. The department has also been doubled in area, and a second dish-washing machine has been installed. Both

machines now have pre-cleaning sprays to dispose of the stickier substances which might otherwise be baked on to crockery if they were fed straight through the machine.

The vegetable kitchen. This has been completely reorganized and it is now a separate entity. The actual location of the department has been altered so that when vegetables arrive in the service lift they come straight into the department where they are dealt with; formerly they had to be taken into the main kitchen, which contained the vegetable boilers.

New equipment includes stainless steel sinks, which replace the old porcelain sinks. There is also a modern potato chipper which cuts potatoes cleanly and without waste. This machine is a very fast worker, for it deals with at least 2 cwt. of potatoes an hour. Other new equipment which helps to save manual labour includes a bean slicing machine, and a vegetable slicing machine which can carry out almost any conceivable operation on vegetables, including grating, slicing and shredding.

The larder. Another big change was made in the arrangement of the larder (i.e., the meat and fish preparation department). Before the war it was sited at the farthest point from the main kitchen, with the pastry room in between. The departments have now been changed around so that the larder is next to the kitchen, and meat and vegetables prepared for cooking travel the shortest possible distance to the ovens. The fact that the pastry room is now at the farthest point from the kitchens is of no consequence because it is completely self-contained. It has its own baking ovens, proving oven, wet steaming oven, mixer, pie-making machines, refrigerator, ice cream cabinet, etc.

Economies Made

One or two straightforward economies have been made. One of these is the abolition of the chef's old private kitchen, which was designed to serve company guests. The space which has become available is now used for cloakrooms and lavatories, the latter having been moved from

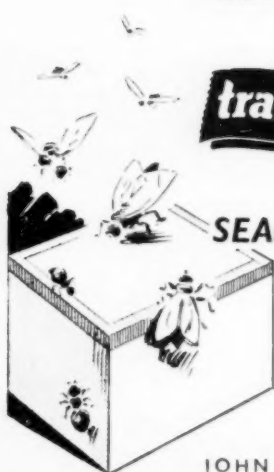
another part of the kitchen area, thus releasing still more floor space for everyday work. Incidentally, even before the war the chef's kitchen had fallen into disuse since it was felt that special catering could be done perfectly well from the main kitchen without making separate arrangements for preparation and cooking.

Finally a word about service. The old electrically heated counters have been replaced by stainless steel steam-heated cabinets with tray rail for easy change to self-service, should this be necessary. Another attractive feature of the serving arrangements is a refrigerated cold counter with an illuminated showcase. This is expected to tempt a great many people into buying cold meat, salads, sweets, and so on.

Altogether, I.C.I. at Millbank are well equipped to prepare, cook and serve any kind of meal, from the most junior typist to important company guests. And since they may, in time to come, have as many as 1,400 customers a day, it is as well that the work behind the scenes should flow as easily and quickly as possible.

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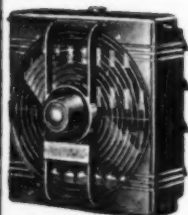


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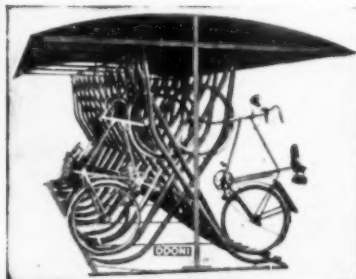
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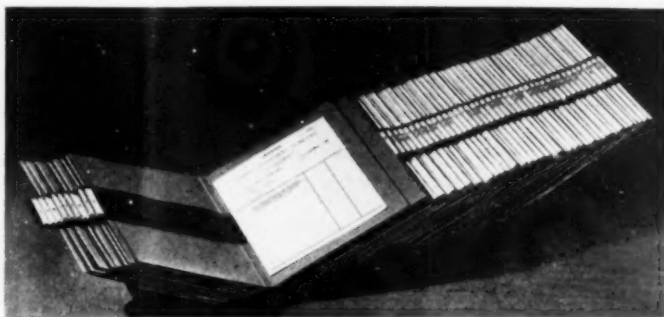
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Stationery—Systems—Equipment

Easy on the Eye

FRESH developments in rubber stamps are few and far between, but the manufacturers of the new Vantee indexed rubber stamp claim to have something new to offer. The novel feature is the top of the mount, which bears the actual impression of the printing, and is specially angled so that the stamp can be recognized quickly and easily. From the clerical point of view, this is an important advantage, since it makes selection of the right stamp much easier than hitherto.

—Enquiry Ref. No. S.2/5.



This new Sortofile speeds filing and matching-up.

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—Enquiry Ref. No. S.2/6.

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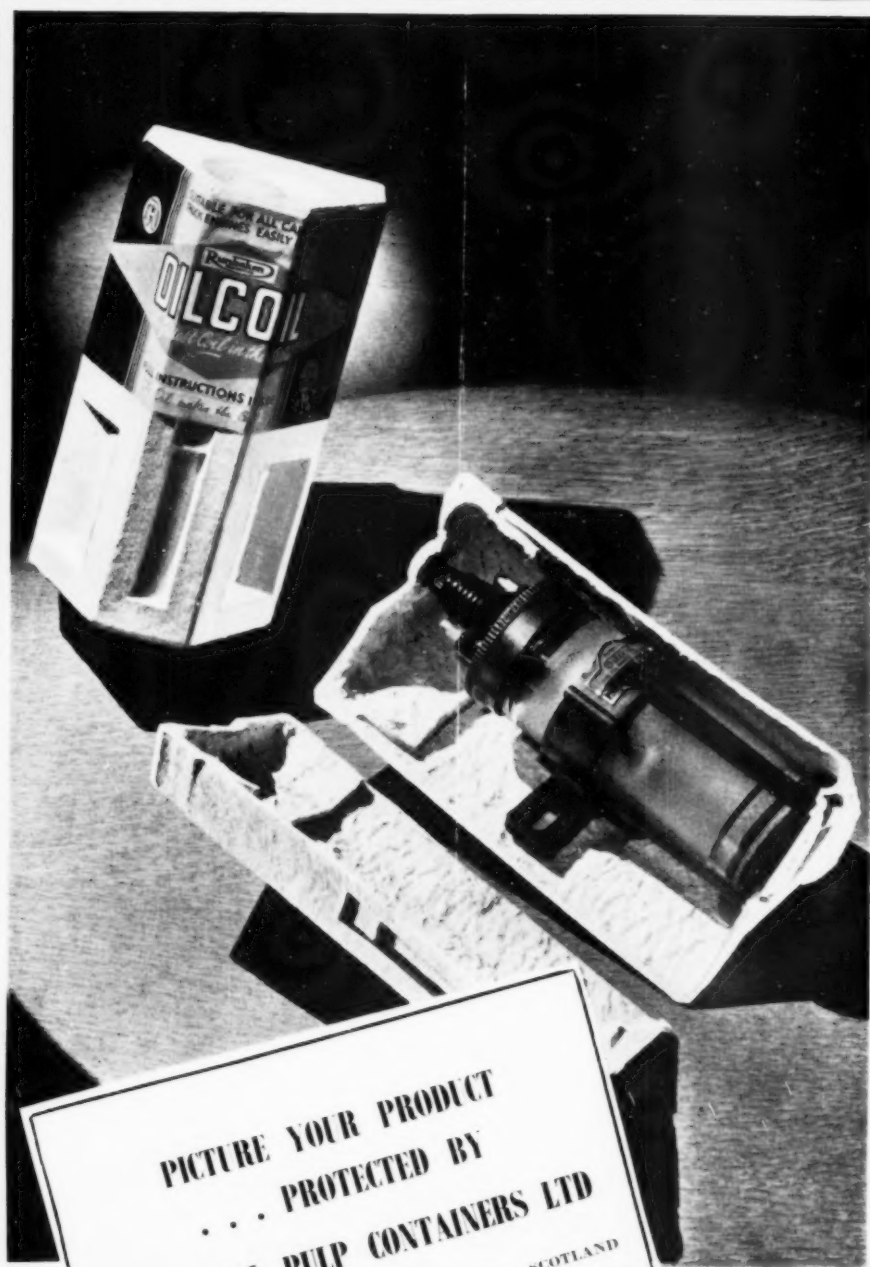
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